

A handbook for film archives

**Based on the experiences of members
of the International Federation of Film Archives (FIAF)
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**Editors
Eileen Bowser and John Kuiper**

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Fédération Internationale des Archives du Film
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Chapter I

Introduction

By Vladimir Pogacic, Jugoslovenska Kinoteka

1. WHY FILM ARCHIVES?

Archives, libraries and museums have been in existence for a thousand years and more. People have always sought to preserve, for themselves and for future generations, some kind of evidence about their lives, their achievements and aspirations, their victories and defeats. From the written documents, charters, treaties, manuscripts and memoirs, from books and pictures, we can get an idea of what a past society was like, and this is how we know about wars, epidemics, religious pogroms, monumental ceremonies, and intimate details of private lives. All this was recorded somewhere, in an official document or in a secret diary, in wall frescoes by an official artist or in miniatures by a friar. We are richer in knowledge because people have preserved such things in state archives, in monasteries and in private collections. Our contemporary civilization would be unthinkable without such knowledge of the past.

At the end of the 19th century, it became possible to record our times on motion picture film. With the motion picture camera it

became feasible, in addition to the subjective observations of life found in histories, memoirs and paintings, to have a mechanically-reproduced version of reality recorded once for all time. The films by Lumière, *SORTIE D'USINE* and *ARRIVÉE D'UN TRAIN À LA CIOTAT*, cannot be made again. They represent a part of the world in 1895, registered for all time, in the same manner as the films of the first step of man on the moon's surface. This mechanical reproduction of the world we live in becomes a document of first importance for a thorough study of everything around us. This alone would be a sufficient reason for the existence of film archives, but it is certainly not the only one.

The incidental presence of George Méliès at the first screening of the Lumière films was the beginning that led to the idea that motion pictures could be something else, as well — an art. A little more than ten years later, D.W. Griffith proved it. Today, a film by Luis Buñuel or Ingmar Bergman may rank among the greatest achievements of human creativity in our day. If motion pictures may be works of art, then this is the second imperative that bids us to keep them. The history of film, and the evidence that film is an art form, lies not in the books or in reviews, but in the works themselves. In order that we, and future generations as well, may make a judgement about that, it is necessary to preserve and conserve them in film archives.

There is a third reason. If not all that has been recorded on film is art, still every film is a document. Even the most inferior film shows and proves something about its time. Mass-produced for the widest circle of viewers, essentially ephemeral, motion pictures are a yardstick measuring trends, tastes, and necessities, and often political conditions as well. As a result, not only documentaries but also fiction films are a document of our times, created in a moment of history that can never be repeated. The melodramatic films of the 1930's were produced under social conditions that were basically different from the ones in which films are made today. They present a world that is no more, and through the existence of these films we learn much about the world in which they were created.

2. COLLECT NOW — COLLECT AS MUCH AS POSSIBLE

It is an astounding fact that mankind, with a thousand-year-old tradition of archives, failed to comprehend immediately upon the invention of the motion picture camera, the significance of preserving motion pictures in the way that written documents, books, music scores and paintings are kept. Because of this failure, even the richest and most developed countries in the world have enormous gaps in the continuity of collections of motion pictures and film documents. To prevent a repetition of this loss in new nations with new cinematographies, it is necessary to begin immediately to collect the earliest motion pictures and film documents, and to set up archives for their permanent retention. Unless each nation collects its own motion pictures and records their development, this part of its history and culture and its contribution to the civilization of the world, will surely disappear.

Everything that the motion picture camera has recorded should be kept if resources permit. It doesn't matter whether a film is a failure or a success, whether it is made by an untrained amateur or by an accomplished professional. Everything serves as a testimony to the present state of affairs, and tomorrow it will serve as an example of development. Today it may be considered a poor effort, tomorrow it may be invaluable. In this way lies the progress not only of a cinematography but also of a nation. The purpose of most film archives is not to engage in evaluation or selection of motion pictures to be collected. Their task is to keep everything. The only selection shall be made by time.

Film archives do not keep only motion pictures, but also photographs from films and about films; film books, posters, screenplays, dialogue and title lists, reviews, sketches of sets and costumes, written documents, and equipment. In the future, it will be very interesting and important to study the camera which recorded a country's first motion picture. Everything that is said here, of course, applies as well to a nation's television production.

3. THE DIFFUSION OF FILM CULTURE

Motion pictures are preserved in archives to be shown, to be studied and analyzed, or to expand our knowledge about film and its art.

Cinema itself is older than most of the national cinematographies of the world. Because of this, the second and more difficult task of film archives is to build collections of motion pictures of the highest artistic value from the international cinematography. Being educated today means having some fundamental knowledge of the art of film and its 80-year development, as well as having a basic knowledge of literature, music and the fine arts. In the same way that writers need to read the classics of world literature in order to get at its substance, so do filmmakers need to be educated in their craft by the critical viewing of the great works of film art. On the other hand, the viewing of good motion pictures increases the knowledge of the film public, and creates its relationship to the art of the film. The creation of this public by the diffusion of film culture is one of the most important activities of the film archive, and represents another reason for their existence.

4. FIAF

The public showing of the first films is generally accepted to have taken place in 1895. The Fédération Internationale des Archives du Film (FIAF) was set up in 1938. Only four film archives took part in its founding. Today FIAF assembles sixty-five members and observers from all the continents of the world, who are united in a single, common undertaking:

- "a) to promote the preservation of the film as art and historical document and to bring together all organizations devoted to this end;
- b) to facilitate the collection and the international exchange of films and documents relating to the cinematographic history and art, for the purpose of making them as widely

accessible as possible;

- c) to develop cooperation between its members;
- d) to promote the development of cinema art and culture."

(from Article 1, Chapter 1, of the FIAF Statutes)

The goals of the archives of the Federation are as follows:
"Members shall be autonomous, non-profit film archives working on a national level whether governmental or non-governmental, devoted to the history and aesthetics of the cinema, and accessible to the public. The members of the Federation shall have as the main object of their activity, to collect, preserve, and catalogue films and all documentation relating to the film medium. Members may and should additionally organize the projection and the viewing of films, provide facilities for consulting documentation, collect and present film museum exhibits, publish film literature and, in general, develop all non-commercial activities related to the promotion and dissemination of film culture, in an historical, educational and artistic perspective." (from Article 4 of the FIAF Statutes)

In order to facilitate the accomplishment of these goals, the members of FIAF have established several specialized commissions, whose task it is to share the experiences and accumulated knowledge of experts from the various archives with all of FIAF and the world at large. The oldest, the Preservation Commission, has as its task the discovery of the best means of storing and preserving nitrate film, safety film, color, and videotape, and of obtaining the most complete scientific information toward this end. The Documentation Commission endeavours to coordinate the work of film documentation throughout the world, to avoid duplication of effort through collaborative projects such as the *International Index to Film Periodicals*, and to seek international standards to facilitate communication. The Cataloguing Commission, using the experiences of its members, tries to find the most efficient way of cataloguing and classifying information about films in the archive's collection, and to identify an acceptable uniform nomenclature to simplify the work of all film archives and their communication. All these commissions

have made the results of their work public, as well as making them available to all FIAF members. The Copyright Commission is charged with reviewing the position of film archives within the framework of national laws and in the light of existing international conventions, as well as submitting proposals for their modification and adaptation to contemporary needs.

The Commission for Developing Countries was established to find means of assisting new archives to grow, in order that the moving images of all countries may be preserved. This publication, which is a sharing of the experiences of FIAF archives, is one of the ways the Commission hopes to achieve its goal.

For the practical training of new film archivists, FIAF has organized Summer Schools: one in Berlin (GDR) specializes in the basic problems of film archives, and another in Copenhagen has been held on the topic of film documentation. The Summer School courses are not yet established on a regular basis, and their future depends upon the needs and resources of FIAF and its member archives.

On the level of bilateral relations, film archives help one another in completing collections, primarily by way of exchange of film and documents, but also through exchanges of experiences, by way of mutual visits of archivists.

Annual congresses of the Federation are being used more and more for convening international symposia in the field of preservation and the basic tasks of the archives, or in the field of film history, and also for direct contacts and exchange of experiences.

New film archives which are interested in sharing the experiences of FIAF and who can meet the qualifications for membership as described in the FIAF statutes quoted above, should apply to the FIAF Secretariat, 1000 Bruxelles, 70 Coudenberg for information. Similar institutions which may not themselves be film archives may nevertheless be interested in applying for observer status in the Federation.

5. AN APPEAL

Starting from the premise that "moving pictures are one of the most characteristic elements of contemporary cultural creativity and of contemporary communication," the General Assembly of UNESCO unanimously voted for the resolution of January 1975 which "recommends to member-countries to immediately undertake legal and technical steps, or, if warranted, to double them to preserve and conserve motion pictures." The General Assembly of UNESCO contends that "their power as a means for spreading cultural, aesthetical, scientific, social and historical knowledge will be affirmed more and more in the future."

Even though this resolution is voiced relatively late, on the 80th anniversary of the existence of cinematography, it appears at the right moment. New nations and new cinematographies are being born. This is the reason for the publication of this manual, based on the experiences of the film archives of FIAF. And that is why we appeal to all film creators, to all the people dedicated to culture, to scientific, social and historical research, to all politicians and statesmen, to pay attention to the significance of the contemporary medium we call the moving pictures. Its significance today is enormous — tomorrow it will be crucial. The future generations shall not forgive us if we turn a deaf ear to this appeal.

Chapter II

Acquisition and Selection

*By John Kuiper, Film Department — International Museum of
Photography at George Eastman House*

1. INTRODUCTION

The basic tasks of a film archive are acquisition and selection, preservation, cataloguing and documentation. The last three are discussed in detail in chapters III, IV and V. This chapter contains a discussion of acquisition sources and techniques. Practical matters concerning the everyday work of archives and tasks not discussed in the other chapters on copyright and the diffusion of film culture are to be found in chapter VIII on practical work.

2. ACQUISITION AND SELECTION

The principal methods of acquisition of film and related materials are gift, exchange with other archives, purchase, loan, deposit, including forms of statutory deposit. (See chapter V, DOCUMENTATION, for a discussion of the acquisition of books, periodicals, scripts, press cuttings, stills, and posters.) All methods

of acquisition are used by some archives, although gifts, deposits and statutory deposit, in countries with a national production, are usually the preferred methods. Every archive must develop its own criteria for acquiring films. These criteria are often expressed in written documents, sometimes called policy statements, that specify the genres of films to be collected (i.e. documentaries, features, shorts, educational, television, etc.). Often, additional statements about the selection policy of an archive must be formulated. These statements specify the type of actual film materials desired by the archive and answer questions like these:

How many copies of a single film title should be kept permanently?

What is the most desirable photographic step to preserve (i.e., original, masterpositive, duplicate negative)?

Should all the episodes of a television series be retained and preserved?

A young archive often is given no choice of materials to select and considers itself fortunate to obtain whatever film material is available to it. But as it gets older the need to select inevitably becomes greater in order to conserve vault space and keep operating expenses in balance with income. The clearer and earlier acquisition and selection policies can be defined, the more logical and orderly will be the growth of an archive.

2.1 Gift

At the end of their initial commercial life, many large and small film producers recall their prints from distribution. At this point, through the foresight of the owners, they are sometimes available to film archives for preservation. Private individuals who have collected because of a special interest in cinema, but who can no longer afford the burdens of storage and preservation, are also a source of gifts. Owners of original footage produced for specific purposes (i.e., family records, scientific inquiry or record, training and education) have also made donations to film archives.

A problem sometimes associated with gifts is the ownership of

the film to be donated. Every effort must be made by the donor and by the archive to understand the legal ownership status of the film material to be donated. The archive must try to find out from the owner or from other sources who owns the rights to the film involved. This information should be permanently recorded in the archive for future reference.

2.2 Exchange with other archives

FIAF rules set up guidelines for the equitable and legal exchange of films between member archives. Such rules are necessary to protect the rights of owners, the preservation of the film materials, and the financial investment of the archives involved.

2.3 Purchase

When all other methods of acquisition fail, film archives purchase preservation materials from the owners. In such a situation, it is extremely important for the archive to pay only the actual costs of acquiring a copy(ies) for the archive. To do otherwise is to cast doubt on the non-commercial status and aims of all film archives.

2.4 Loan

FIAF rules set up guidelines for the loan of films between members and indicate when it is appropriate and legal to preserve the loaned film within a member's archives. Loans of film are never made that are contrary to the interests of copyright owners or donors.

2.5 Deposit

Films may be placed in archives on various forms of deposit. In such cases the owners and the archive agree to an exchange of services, rights, materials or other valuable items. For example, a

depositor might wish to place a film in an archive to reduce his storage costs while the archive might wish to accept such a deposit for the right to make preservation copies of the film and to show the film non-commercially on its premises. Statutory deposit systems usually involve the exchange of the recognition of rights of a producer for the deposit of a copy of the film in a national archive.

2.6 Avoiding competition

As motion pictures become more scarce through the inevitable process of deterioration and destruction, the possibilities for competition between film archives for the acquisition of collections tends to increase. Film preservation, storage, and archive work is expensive and time consuming and competition between organizations with similar aims is to be avoided because of the dangers of duplication of effort and the possibilities of raising the monetary value of collections beyond the means of archives to acquire them.

On the international level, FIAF statutes and rules provide a rule of exclusivity which helps reduce the tension of competition from foreign archives within a given nation. When there is more than one archive in a country, this right is shared, and the archives with national programs should be encouraged to develop cooperative programs of acquisition that do not result in wasted or duplicated effort.

Chapter III

Preservation

*By Herbert Volkmann,
Chairman of the FIAF Preservation Commission*

1. GENERAL REMARKS

The *raison d'être* of a film archive is contained in the use that is made of it, i.e., a great film archive makes its collections available for viewing, whether for scholarly, artistic, or generally cultural purposes. However, an essential precondition to this viewing is the collection, cataloguing, preservation and, when necessary, the renovation of films and media in the archive's collections.

Unfortunately, films and magnetic tapes are the least stable materials; only under the most favorable conditions can they be preserved in their original state and format for many decades. Where these conditions do not exist, the production of an intermediate copy is required. The life of a film or magnetic tape can be prolonged if it is copied early enough, but with each successive generation a certain loss of quality results, until finally all nuances of color and gradation disappear and only harsh black and white and distorted color tones remain; in the case of a color film the balance between the colors is so destroyed that the film can neither be used as a basis from which

to copy, nor can it be used for projecting. There are many examples of this deterioration of quality to be found in older archives and it may be clearly observed in many compilation films.

Consequently, it is imperative that the professional staff working in film archives know how to get the longest use out of their collections. To do so, they must also have the necessary equipment at their disposal.

There are no "maximum" and no "minimum" conditions for the preservation of such collections. But the most favorable conditions can be established. Unfortunately, science and practice have shown that the most favorable conditions for the preservation of film archive materials are very critical and permit little leeway in variations from the conditions set up later in this chapter. These conditions will be presented later, at which time reasons for their establishment will be given. Until now, due to financial considerations, only a few archives have been able to set up a really first-rate preservation facility; consequently emergency solutions must also be discussed here. However, temporary and emergency solutions can at best only postpone to some extent decay and eventual destruction and these solutions are offered in the hope that the finances needed for the creation of suitable storage and testing facilities may become available before part of the cultural heritage of cinema is forever lost.

2. FILMS

Motion picture films, mainly of 16mm or 35mm gauge, occasionally of 8mm or 70mm gauge, today constitute the greater part of the holdings of a film archive. It is with the preservation of these that the work of film archives is mainly concerned. One has to understand the composition and characteristics of film materials in order to devise effective measures for their preservation.

2.1 Some dates of historic importance

Film was the first medium of audiovisual information, but today it is no longer the only one.

It is well to commit to memory certain dates, as these may prove useful for the rough identification of materials, and in determining the best methods of preservation.

The first films (in black-and-white, silent, and on a nitro-cellulose base) were shown around the year 1895.

Just before the turn of the century (in 1897) attempts were made to introduce films in color. There were many experiments, involving a variety of systems, but none proved suitable for commercial production; in 1915 the process of printing Technicolor positives on the base of two color separations was established for the first time, and from 1932 on there were three color separations, a method still in limited use today.

In 1923 the first film with photographic sound (optical sound) was introduced, and by the end of the twenties the sound film had driven out the silent film. The sound film is the first audiovisual informational medium.

1936 marked the appearance of the first color film with chromogenous development (Agfa-Wolfen), i.e. with colors that were produced in the process of development and which have a lower stability than the colors of the Technicolor process. All color negatives, and a high proportion of color positives, are produced today according to this system.

At the beginning of the nineteen-fifties, a decisive new step was taken: the nitro-cellulose base, usually called nitrate base and until then the only one available, was replaced by one of acetyl-cellulose (usually called acetate, or safety film) which from then on has been virtually the only type produced for use in movie houses.

Since this time there have been few new, basic developments in the technique of raw film production. Improvements were made, especially as regards color quality, and there were some changes in format. The further development of the medium was in a new

direction, which concentrated on the possibilities offered by television.

2.2 Structure

Cinematographic films are composed of multi-layered materials: they consist of at least a base or support, a very thin adhesive substratum, and an emulsion layer for the optical recording of both picture and sound.

Black-and-white films have only one emulsion layer, whereas color films have three such layers for each of the basic subtractive colors (yellow, magenta and cyan) and one or more filter layers.

2.2.1 *The film base or support*

The film base of old films (raw film production before ca. 1950) consists of nitro-cellulose (nitrate film); films produced after this date use an acetyl-cellulose base (safety film), or in the case of 8mm film gauge, one of polyester.

All these bases have equally good optical qualities, equal elasticity and tensile strength. By reason of their very different chemical qualities, however, they vary a great deal as to their length of life, their reaction to the emulsion and to their surroundings. The conditions required for the preservation of nitrate films are therefore different from those governing acetate or polyester films.

2.2.2 *The adhesive substratum*

This consists of gelatin.

2.2.3 *The emulsion layer*

The emulsion for the optical recording of both picture and sound is the most important part of the multi-layered film. It is in principle the same for all black-and-white film, both positive and negative. It consists of a suspension (i.e. a mechanical distribution

of minute, finely distributed particles of silver halogens in gelatin). Black-and-white films of every category have only one emulsion layer. Color films (see below) have several layers.

Gelatin is an organic product (animal albumen). Given favorable storage conditions, it is almost as durable as the acetate or polyester base to which it is attached. But if storage conditions become too moist, it swells and becomes sticky. Warmth increases this danger.

Gelatin is an excellent nutrient for bacteria or fungi, which can penetrate the emulsion layer and destroy the image. In order to avoid this, the relative humidity of a film storage area should never exceed 60%.

To prevent films from becoming brittle, on the other hand, the relative humidity should never be lower than 50%.

Apart from fluctuations in the climatic conditions of the film vault — too warm, too moist or too dry — harmful gases in the air (sulphur dioxide in particular), the gases released in the decomposition of the nitrate film, and chemical residues constitute danger for the preservation of the emulsion layer.

Among other things, it is important that the film be washed thoroughly during its processing or before it is stored, so that no chemical residues remain in the film that could cause spotting, browning, or fading of the image.

2.2.4 *The varnish layer*

A varnish layer sometimes serves as a protective covering for the blank side, or base side, of the film. It consists of a solution of 1% nitro - or acetyl-cellulose, depending on the type of the base.

2.3 Black-and-white nitrate film

Until the end of the 1940's and the beginning of the 1950's only nitrate film was used for cinematograph film. It is now no longer used for this purpose. Every film archive strives to copy its nitrate-based holdings onto acetate film as quickly as possible.

If possibilities for storage in separate buildings exist and adequate safety equipment is available, an attempt should be made to preserve nitrate film that is still intact as long as possible. This is so because nitrate films tend to be original copies and as such may be the best original photographic material of a film available.

Nitrate film has two fundamental disadvantages:

- It is very unstable.
- It has a tendency to ignite by spontaneous combustion when old.

2.3.1 The nitrate base

The nitrate base decomposes even under favorable storage conditions, and in the process gives off harmful gases, especially nitrogen dioxide (NO_2). This decomposition can be retarded, but not prevented.

The nitrate gases released by decomposing nitrate film combine with the moisture content of the gelatin to form nitrous acid or nitric acid. These two acids bleach the silver image, or color picture, in the emulsion and also accelerate the decomposition of the base to the point of total destruction. The gases released have an equally deleterious effect upon safety film stored in the same room or building. The amount of gases released depends upon the storage temperature. Reducing the storage temperature by 5°C means a fifty per cent reduction in the production of nitrate gas: i.e. by lowering the temperature from 20°C to 3°C the amount of nitrate gases released is reduced to less than one-tenth of the original amount.

Decomposition of nitrate film can go on for a long time without there being any external sign of deterioration. Only in the final stages, which may last no more than a few months before the final destruction of the film, do the following visible changes appear, in this order:

- a. The silver image becomes faded and there is a brownish discoloration of the emulsion.

The colors fade, and a loss of balance between the colors occurs

- b. The emulsion becomes sticky.

- c. There is a partial softening of the emulsion (formation of "honey"); it becomes blistery and emits a pungent odor.

- d. The entire film congeals into one solid mass.

- e. The film base disintegrates into a brownish powder, giving off an acrid smell.

Only in the first and second stages can the film still be rescued by immediate treatment and copying.

From the third stage on, the instant destruction of the film is urgently recommended because in these final stages the film has a very low combustion temperature.

We know that some original nitrate films dating from the 1890's have been preserved, while others have decomposed after less than ten years. The life expectancy of nitrate film (or of any film) in an archive cannot be predicted with certainty since this depends on various factors over which the film archive has no control (e.g. the purity of the materials used in the production of the raw film, the care taken in the printing process, the thoroughness with which it has been washed, and possibly the conditions under which it was stored before it entered the archive). A film stability test makes it possible to determine the stage of disintegration.

Today it can be safely asserted that all nitrate films stored in archives have already reached the point where their age makes it imperative that they be rescued by immediate copying.

2.3.2 Spontaneous combustion

When first manufactured, nitrate films had an ignition temperature of 130°C . With increasing age the ignition temperatures of the film falls. Practical tests carried out in the USA have established that old, badly decomposed nitrate film can ignite at 40°C ., i.e. at a temperature that is easily reached in strong sunshine even in temperate zones. It burns almost with the force of an explosion (20 tons of film in approximately 3 minutes) and creates a temperature of up to 1700°C .

As nitrate film produces its own oxygen, extinguishing the fire

by the usual methods (mainly by using water or carbonic acid snow) is at least of questionable effectiveness. Carbonic acid snow, however, delays the bursting into flame of the material; water cools the surroundings most endangered and lowers the temperature of the fire.

The film itself can no longer be saved.

The numerous fires in film archives — with varying conservation conditions and located in different climatic zones — can be attributed primarily to self-combustion of the nitrate material. Valuable and irreplaceable films have thus been lost.

2.3.3 In view of the behavior of the nitrate film, certain steps will have to be taken if it is to be preserved at all. Inasmuch as chemical reactions are slowed down at reduced temperatures, it is essential to see to it that nitrate film storage facilities are as cold as possible. The most suitable temperature is $+4^{\circ}\text{C}$., with tolerable fluctuation of $\pm 2^{\circ}\text{C}$.

Humidity accelerates the disintegration caused by oxides of nitrogen, and must therefore be brought under control in all film storage areas. On the other hand, conditions that are too dry cause brittleness, making the film unusable and increasing the danger of fire. The range in which one can safely operate is therefore very narrow, lying between 50 percent and 60 percent relative humidity.

The climatic conditions specified above must be kept constant, since if they are allowed to fluctuate, various reactions can cause the layers of the emulsion to become detached.

Such control of temperature and humidity can only be achieved through using appropriate air-conditioning equipment and also providing air ventilation and filtration, so that even the small amounts of oxides of nitrogen produced by nitrate film deterioration in low temperatures are expelled from the vaults.

It is absolutely essential to know and strictly to observe the regulations for the storage and use of nitrate films (legal rules and/or fire codes concerning celluloid) in a given country. Normally, the

most important of these rules is that nitrate film must be stored in an isolated manner, at a safe distance from rooms that are occupied either for living or work, and that nitrate film may only be projected in specific localities. Firefighting equipment and emergency exits must be available. In many countries nitrate film can no longer be safely transferred by means of public transportation, nor can it be carried on roads with heavy traffic. In these countries where it is still permitted, every precaution must be taken to see that appropriate safety measures are strictly enforced.

A system of isolated metal storage cabinets, developed by the State Film Archives of the G.D.R. has proved effective for storage.

2.4 Black-and-white Acetate Film (Safety Film)

It is useful for the film archivist to know that practically all 16mm films, all 70mm films, and since the beginning of the 1950's, almost all 35mm cinematograph films have been produced on acetate base.

2.4.1 Acetate base

Acetate base differs chemically from nitrate base. It is neither particularly inflammable, nor does it emit obnoxious gases. When considering permanent storage, it is important to know that under the influence of oxygen in the air the plasticiser escapes from the acetate base, and as a consequence in the course of time the film will shrink and become brittle. If the humidity is too high, the plasticiser will form crystals.

There is a good chance that the loss of the plasticiser can be retarded through the use of hermetically-sealed cans. This, however, might have one very negative result: i.e. the possibility of water condensation occurring in the cans whenever the temperature fluctuates (or if the films are taken in or out of the vaults).

2.4.2 The storage of acetate film is therefore much simpler than

that of nitrate film, and also promises better results under optimal conditions. For example when acetate film is handled out of the can, many of the fire precautions taken while handling nitrate film need not be observed. Acetate film can be stored as conveniently as books are stored in large libraries. The chief dangers are the loss of the plasticiser, the growth of fungi, the destruction through bacteria and, in the case of temperature fluctuations, the detachment of the emulsion layer, as well as the harmful effects of air pollutants. Consequently, temperature, humidity and ventilation controls of the storage areas are advisable when acetate film is kept in an archive. In an acetate film vault the temperature can be higher than with nitrate films, but may not exceed 12°C. The humidity rates are the same as with nitrate films, i.e., a high of 60 percent and it is imperative that these specified climatic conditions be kept constant.

2.4.3 The physical separation of nitrate film from acetate film is an essential condition for the preservation of the latter.

2.5 Color in Film

2.5.1 General Remarks

Since the Second World War color photographs have nearly all been made according to one or the other of the following processes:

- a. By the production of color during the development of the film (chromogenous development.)
All color negatives, as well as the majority of color positives, are made today in this way.
- b. By printing positive colors upon the film band (only Technicolor positives.)

In order to reproduce all the possible color nuances on film, the spectrum is divided into three large spectral sectors corresponding to the three primary colors: blue, green and red.

2.5.2 The additive system

This system, used only during the first period of experimentation with color film, involves a synthesis of three basic colors.

In spite of good color qualities, this system has not been generally adopted because of unsurmountable difficulties, both in taking the pictures and in projecting them.

Of these early attempts evidently nothing has survived, and the matter is thus of little concern to the film archivist.

2.5.3 The subtractive process

This process is based on the separation, by means of filters, of the white light beam into three basic colors — yellow, magenta and cyan — or into other color combinations which are embedded in the emulsion of the multi-layered color film.

In these instances, the colors are produced through chromogenous development (cf. 2.5.1) or through bleaching (e.g. Gaspar-Color).

The preservation of color film depends ultimately on the stability of the color dyes used.

The color chemicals created through the chromogenous development belong in the Azomethine and Indoaniline classes. The low stability of these chemicals renders them unsuitable for printing on either textile or paper.

The colors used in printing Technicolor films belong in the class of Azo color chemicals, which are at least three or four times more stable than the color dyes produced through chromogenous development.

It is thus easier to preserve color printed film (Technicolor positive) than multi-layered color film produced through chromogenous development. In any case, the silver image of the black-and-white film is a great deal more stable than all images in color. Thus the preservation of color film is much more complicated than that of black-and-white film.

2.5.4 *The disintegration of color in film*

The disintegration of color in film is a chemical process in which the color dyes of all three layers of a film are destroyed. Ideally, the rate of discoloration should proceed at the same pace in all layers. Unfortunately, however, the various pigments react differently to the destructive agents, so that under unfavorable conditions, in a relatively short period of time, the color balance can be destroyed to the point where the film is rendered unsuitable for either projection or copying purposes. The film thus becomes useless.

Film archivists should know that in certain old color film copies which were made by the Fischer process (e.g. Agfacolor, Perrania, Fuji, etc.) the cyan pigments were the first to disintegrate. With the discovery of a more stable cyan pigment, it is nowadays the yellow that is most endangered. This applies to negatives as well as positives. Most manufacturers of film already introduced this improvement in the 1950's.

Basically, the same factors that have a harmful influence on the black-and-white film are also injurious to the color film:

- Temperature
- Humidity
- Light, especially ultra-violet rays
- Residual chemicals
- Oxides of nitrogen
- Harmful gases in the air
(e.g. industrial air pollutants)
- Bacteria and fungi

All these agents have a stronger and faster destructive impact upon the pigments than upon the silver image. Thus color films have a shorter life span.

2.5.5 *The impact of these factors on the methods of preservation of original color film*

According to experiments carried out in the USSR and the

USA, temperatures above 0°C. are positively harmful. The higher the temperature, the more rapid the rate of deterioration of the color image.

When the temperature falls below freezing point, the relative humidity must also be lowered. When the relative humidity rises above 30% destructive processes are set in motion, which affect the colors in particular.

The light to which the film is exposed during the copying process and the projection, though intensive, is but of short duration. Thus the light factor is harmless and, moreover, since films in storage are kept in closed cans, it can for all practical purposes be disregarded.

Since residual chemicals have a speedier negative effect upon color film than they have on black-and-white film, it is of great importance that when storing color film the latter does not contain any such residues. It is, therefore, strongly advisable that all color films be thoroughly washed before they enter an archive. Damages resulting from insufficient washing cannot be repaired through re-washing at a later date.

The printed colors (Technicolor) may be water-soluble, hence in this instance washing should be avoided.

There are two methods by which the life span of a color film can be lengthened:

- a. By creating optimal climatic conditions.
- b. By preserving color separations on black-and-white film.

2.5.5.1 *Figures pertaining to optimal climatic conditions*

The creation of climatic controls in the storage vault, with low temperatures and low humidity, is the only way by which original materials, such as original negatives, reversal prints, etc., can be preserved over a longer period of time.

After research in the USSR extending over several years, the following figures were established as optimal conditions for a storage climate:

A temperature not higher than -5°C.

A relative humidity between 20% and 30%.

It is essential that the temperature in the storage area not rise above -5°C ., since it has been observed that between -2°C . and $+2^{\circ}\text{C}$. the adhesive substratum between base and emulsion deteriorates, causing detachment of the layer.

Since for the preservation of color film the maximum allowable relative humidity is 30%, in practice the relative humidity has to be set lower to allow some leeway for the air-conditioning machinery, which does not work with absolute precision.

Nitrate color films should be stored under the same climatic conditions as acetate color film. Since nitrate color films are even more sensitive than black-and-white films in their reaction to oxides of nitrogen, they must never be stored in hermetically-sealed cans. Because of the danger of combustion, nitrate color films must be stored separately from acetate color films.

2.5.5.2 *Emergency measures*

It is recommended that newly established archives, which for financial reasons cannot yet build an automatic climate control system, include at least some form of insulation against temperature fluctuations in the storage building. A dehumidifier, coupled with an automatic defrosting service, should also be available in the vaults.

The application of drying agents, notably silica gel, is not recommended. In order to reach the desired degree of dryness in the air, a quantity of silica gel, equivalent in weight to that of the films to be preserved, must be used. Moreover, silica gel turns to dust, which can harm the film when it is projected or copied.

It is preferable to store color film with an acetate or polyester base in a polyethylene bag. If the bag is scarcely larger than the reel of film, fluctuations of the humidity can be kept within certain limits without air-conditioning.

The film has to be put in the bag at the temperature which is likely to prevail in the storage area, and the bag must be hermetically sealed. The bag has to be replaced at least once a year. This

procedure, too, must be considered an emergency measure, which cannot be repeated for any length of time with impunity.

2.5.5.3 *Restoration and regeneration*

There are two ways in which the color image can be restored or regenerated:

Through chemical means.

Through corrective copying.

Both methods are still in an experimental stage.

They are very expensive, hence can only be used in order to save the most valuable material, and under the direction of technical specialists.

Chemical renovation of the color gradations is very difficult and is achieved through a selective strengthening or weakening of the dyes. Inasmuch as the process must be applied to the film itself, this procedure is not without risk.

Corrective copying is done by reproducing the color separations of the faded, or changed, color images upon appropriate materials. The correction can be achieved through changing the length of exposure, as well as through variations of the baths or of the processing time of the films.

Television technology can be helpful in the matter of restoring color images of films through an exact testing of the color changes in the negatives, as well as in the matter of corrective copying. This is done through the use of electronic color analyzers to determine the parameters of the necessary corrections.

Because of the unsatisfactory quality of television images (the number of lines is too small) the application of television technology to the preservation of films is at the present time limited to film regeneration.

2.5.6 *Black-and-white color separations*

A method of preserving color film that is excellent in theory but has considerable drawbacks in practice is to store individual

black-and-white color separations of each of the three basic colors.

Admittedly, this method calls for four times as much storage space, since a separate copy of the sound track has to be added, but the preservation of the black-and-white color separation is definitely safer than the preservation of the original color.

The greatest danger of using color separation lies in the possibility of variations in the degrees of shrinkage occurring in the three films, which may make it impossible to superimpose the three images on each other with the necessary precision.

Shrinkage could be avoided if the base itself were unshrinkable. Polyester would be the most suitable material; however, because of the difficulty in binding the emulsion firmly to the polyester base, polyester has so far only been used for small gauge films (8mm and 16mm).

By copying the three color separations of the same image one after the other on to a black-and-white film, the danger of non-uniform shrinkage can be avoided. Nevertheless, such a procedure would make it impossible to equalize contrast differences between the various colors that are already present, and since no gradation is possible, the final copy will have a disturbed color balance.

2.5.7 Acclimatization

If the optimal low temperature and the recommended air humidity are adhered to, it is absolutely necessary that films be acclimatized before entering or leaving the vaults. This applies to the temperature and humidity rates for black-and-white acetate film (only if the difference in temperature between inside and outside is relatively great), as well as to nitrate film, and especially to color film, since the transition from freezing to thawing temperatures is dangerous under any circumstances. Acclimatization can be achieved through either natural or artificial means.

Natural acclimatization proceeds in two stages. The temperature in the closed can has to be made equal to that of the room in

which it is to be stored, if the temperature of the latter is below dew point. Depending on the outside temperature and the format of the film, up to six hours are required for this process. In the second stage, the can is opened in order to equalize the air humidity. Depending on the differences between the relative humidity of the air inside and outside, and the format of the film, up to thirty days are required.

Through artificial acclimatization of color films in acclimatization cabinets or chambers, these periods can be considerably shortened. For about 200 reels of 35mm film, up to 24 hours are needed.

2.5.8 Professional staff

In view of the complexity of the task of preserving color film, it is strongly recommended that all archives assign this work to qualified staff, i.e. technicians, engineers or chemists. In addition, a close cooperation with film technical institutes, film manufacturers and motion picture engineering specialists is recommended.

2.5.9 Black-and-white copies of color films

In view of the impossibility of preserving color films indefinitely without expensive installations, some archives have begun to copy color films on black-and-white film. While this is undoubtedly better than the complete destruction of the film, it must be realized that an essential artistic element is thereby lost, namely the color.

3 MAGNETIC RECORDINGS

3.1 General remarks

With the introduction of magnetic sound, and later of magnetic picture recording as well, an entirely new element has been added to audio-visual techniques. The film captures the image directly, just

as it is seen in reality, whereas with magnetic recordings, electromagnetic signals are stored which when transmitted turn into sound and images.

Here we are faced with a basic difference, which requires not only the introduction of entirely new technical systems for the taking and reproducing of pictures, but also new methods of conservation.

Today's situation is such that television technology is rapidly developing, whereas film technology is stationary. As a result, archives will increasingly have to store magnetic recordings, and for this reason we must also consider them here.

3.2 Historical development

Since the end of the First World War, and parallel with the film, radio has been developed, and with it a still very imperfect method of magnetic sound recording.

At the present time archives receive the following magnetic materials:

- Soundtracks on film
- Magnetic films and tapes
- Soundtracks as part of films
- Videotapes

The first practical attempts to send television broadcasts go back to 1923. The enormous development of television as a mass medium, however, occurred in the years following the Second World War. At first, mainly films were used, then in their place magnetic media for picture and sound were developed: these are the videotapes.

Color television began in the US in 1953, and in Europe in 1967.

The development of new audiovisual communications media has by no means run its course. New communications devices, which can also be more easily preserved, are either about to be released by industry or are being tested in the laboratories.

3.3 The structure of the tapes

As with the cinematograph film, tapes for magnetic recording consist of a base and a layer. As a rule the base consists of the same material as that of the film, i.e. acetyl-cellulose, but it may also be polyvinyl chloride (PVC) or polyester.

The layer, however, differs completely from the emulsion layer of the film. It consists of particles of either iron oxide or chromium dioxide which are suspended in an organic lacquer. It is opaque but can be magnetized.

3.3.1 Bases of tapes

The archivist can determine the age of a base according to the material of which it is made.

The first tapes, those made after the First World War, had a paper base, which soon afterwards was replaced by one of triacetate. After 1945 certain manufacturers re-introduced the paper base as an emergency measure, but shortly thereafter the change-over to PVC occurred.

Today most tapes have a base of acetyl-cellulose or polyester. The general tendency is towards the polyester tape, which has some very positive qualities. Among other things, it is insensitive to humidity, heat, fungi and bacteria. But it also has certain serious drawbacks: the firm adhesion of the lacquer layer to the base is a problem not yet satisfactorily solved. Furthermore, if it is subjected to too much pulling, the tape tends to stretch, and thereby becomes unusable.

One tries to counteract this by double-stretching the tapes ahead of time, so that when exposed to unavoidable stretching, they do not expand any further and thereby change the position of the magnetic particles and thus of the recordings.

3.3.2 The magnetic layer

In the early stages, the iron oxide particles were not uniformly

suspended in the layer of lacquer, and moreover were of a variety of sizes and shapes. Today they are needle-shaped, and in the standard new tapes they are 1/1,000mm long and 1/10,000mm thick. The trend is towards making the magnetic particles still smaller and geometrically more uniform, above all in order to minimize the background noise, while at the same time increasing the quality of the recording.

Normally the quantity of iron-oxide in the layer is 30% (density of emulsion). This quantity cannot be exceeded to any extent without negatively affecting the storage qualities of the tape.

In recent times chromium dioxide particles have sometimes been used instead of iron oxide. For practical purposes such tapes have better qualities, but for archival storage they present difficulties. A great advantage of the chromium dioxide tapes is that they can be copied through a thermal process, which is a great deal simpler than the process used when copying iron oxide tapes.

Tapes containing cobalt are also on the market; these are intended only for videotapes. It is too early to judge the preservation aspects of these tapes.

3.3.3 *The adhesion between base and layer*

As a rule no adhesive layer is used to attach the magnetic layer to its base. Thus the firmness of the attachment depends on the qualities of the special lacquers used for the magnetic layer. One can say categorically that the layer is by no means insensitive to heat. It has been established that temperatures below -10°C . and above $+40^{\circ}\text{C}$. can destroy the magnetic layer.

It has already been stated that the polyester base poses considerable difficulties with respect to adhesion. What effect this will have upon permanent storage is not yet known.

For a short time there were so-called 'mass tapes', i.e. tapes where the iron oxide particles were directly suspended in the base. This process, designed to circumvent the problem of adhesion between base and layer, has not proved viable. The tapes proved quite unsatisfactory in practical use.

3.4 **Preservation of tapes**

The preservation of tapes, as far as the base is concerned, differs little from the preservation of cinematograph film. However, owing to certain different characteristics of the layers, a number of special measures are necessary.

3.4.1 *Climatic conditions*

Just as with the cinematograph film, storage under climatic conditions that are kept constant, i.e. with the lowest possible fluctuations of temperature and air humidity, is a prerequisite for the preservation of magnetic tape.

The most suitable climatic conditions are identical with those given above for tri-acetate black-and-white film, i.e.:

A temperature of not more than $+12^{\circ}\text{C}$.

A relative humidity of not more than 60%.

Frequently a temperature of $+6^{\circ}\text{C}$. is recommended as being the most suitable for magnetic tape, i.e. a temperature that is also well suited to the preservation of acetate film.

These climatic ratings have the not inconsiderable advantage of making it unnecessary to create a new type of storage vault for magnetic tape. The latter can be stored in the same rooms containing tri-acetate black-and-white film, provided that there are no magnetic fields in the vicinity that could disturb the position of the particles.

3.4.2 *Protection against interference from electro-magnetic fields*

One of the most serious negative aspects of electric recordings is the fact they cannot be fixed. Consequently, outside electro-magnetic fields can at any moment cause a change in, or even a total obliteration of, the recordings.

Everything possible must therefore be done to prevent the formation of such fields of interference in the immediate vicinity of

tapes that carry recordings. Sources of such danger commonly are: loudspeaker magnets, electric motors in appliances or vehicles, lightning conductors on the exterior of storage buildings, tape erasing machines, etc.

On the other hand, one should not exaggerate these dangers either, since it is only in the immediate vicinity that such interfering fields have a negative effect. The customary tape erasing machines are among the most powerful sources of disturbance, but even they are harmless at a distance of more than two meters.

The transportation of magnetic recordings outside the storage area constitutes a special danger. The customary tin containers provide a certain protection. If, however, such recordings are transported in an electrified train, with its strongly interfering magnetic fields, the use of special containers is recommended. Such containers, made of highly permeable iron (20% iron and 80% nickel), are strong magnetic conductors and thus provide an assured protection.

3.4.3 Inspection by means of measuring tapes

Even magnetic recordings do not have an unlimited life span. When stored over a longer period, the level of the magnetic sound is constantly lowered in a logarithmic ratio to time. Thus the distance between signal and background noise is shortened so that, for instance, a tape which originally had a distance of 60 db, after a hundred years would only have a distance of 52 db. Thus over a long period of time the recordings become unusable.

It thus becomes necessary to measure the tapes not only before they are stored but also at periodic intervals during storage. Normal magnetic recordings (image, music, speech, everyday sounds) cannot be used for measuring. It is necessary to store with the recorded tapes measuring tapes with special recordings, which if possible should be of the same make as the recorded tapes themselves.

The customary commercial measuring tapes cannot be used for the inspection of the stored material. Special measuring tapes are presently being developed.

3.4.4 Loss of softening agent

Magnetic tapes must be as pliable as possible, so that they never lose contact with the sound head. For this reason they always contain a softening agent, which is usually either silicon resin or phenol. These softening agents escape slowly but surely from the tape; the rate of escape can merely be slowed down through storage at a low temperature, with low humidity and increased air pressure. The loss of the softening agent results in the tapes becoming brittle. When that happens, they can no longer be used, nor can they be regenerated.

There are tapes that are allegedly free of softening agents, but in reality only their support has none, whereas their layer still contains softening agents. When stored over a long period, such tapes are equally endangered.

The only way to avoid damage is to adhere strictly to the climatic conditions stipulated under 3.4.1, and to provide a certain atmospheric pressure in the storage area. This can only be achieved by total air-conditioning.

3.4.5 Background noises

Every magnetic tape, when played back, creates a tension in the sound head that comes through as a kind of background noise. The intensity of this noise depends on the size of the iron oxide particles. For this reason, special tapes have been created for hi-fi technology, the low-noise tapes, which because of the minute size of the magnetic particles and because of their extraordinary thinness have excellent qualities for both recording and play-back. However, the low-noise tapes presently available commercially are not very suitable for permanent storage.

3.4.6 Copying effect

Another negative factor in the preservation of magnetic tapes is the so-called copying effect.

This is the effect which each layer or turn in a roll of magnetic tape exerts on the layers adjacent to it, so that its recording is faintly copied on to them. The intensity of the copying effect depends on the thickness of the layer support, and on the intensity and duration of the magnetic influence. The effect is intensified if the tapes are thin, the magnetic fields are strong, the temperature is high, and there is powerful mechanical stress. Videotapes, for instance, because of the short wave lengths of the recorded image signals in the video sections, show no copying effects. However, because of the thinness of the tape, they are all the more exposed to the copying effect in the sound section.

In most instances repeated re-winding of the tapes will reduce the copying effect to the point where it is no longer disturbing.

3.4.7 *Memory effect*

Memory effect can only occur on tapes that already carried recordings which were then erased. The earlier sounds can still be heard in the silent passages, as in recorded speeches, where the previous recordings have not been completely erased.

The only sure way to avoid memory effect is by the use of new tapes. In tapes put on the market after 1967, no memory effect has been observed.

3.4.8 All magnetic tapes are flexible, and when subjected to strong pulling, show a tendency to stretch in varying degrees. This stretching can affect the sound recordings in particular to the extent that whining occurs; therefore one must at all costs avoid the re-winding of tapes at high speed, unless there is a special tensiometer used to monitor the tension exerted during re-winding.

3.4.9 Shrinkage, either in width or in breadth, is of no significance as far as the conservation of polyester and PVC tapes is concerned.

Tri-acetate tapes shrink exactly as films do. A certain amount

of shrinkage in the image can be compensated, but on sound tape strong whining occurs. For this reason, shrinkages have to be measured with the micrometer, including shrinkage of the thickness of the tape.

3.4.10 Whenever a tape is used, either for the recording or for its play-back, electrostatic charges occur through friction of the sound head of the instrument: these charges attract dust. Dust, in turn, can lead to disturbances during recordings and play-backs, and can even cause mechanical damage to the tapes.

Friction of the tapes at the sound head cannot be avoided. The only solution is to ground the charges as quickly as possible. This can be achieved by adding discharging agents, such as soot, to the layer itself, or by introducing a special intermediate layer containing such agents.

4 NEW COMMUNICATIONS MEDIA

4.1 General remarks

The general advance of science and technology in the field of communication electronics, the desire to improve the quality of television, the awareness of the low stability of the traditional audiovisual communications media, and the concern for the re-use potential of recordings have resulted in a development of new electronic devices for communication purposes. None of these new developments as yet concern the archivist, because they are either about to be produced or else have not yet passed the laboratory testing stage. In any case, they are indicative of future trends and thus merit our close attention.

4.2 Systems in the process of development

Here we shall only briefly discuss the possibilities which either have already become realities, or can be recognized in outline.

4.2.1 The electro-photographic method

Electronic signals given by a television camera or a magnetoscope are recorded on black-and-white 8 mm film with an extremely fine grain, in such a way that light and color signals of the image lie side by side on the film. The film is projected electronically.

4.2.2 The holographic method

A film copy, on which there is a plastic layer, is scanned by a laser beam. On the plastic surface, which thereby has become a holograph, relief variations appear which contain the light and color data. The projection is achieved with the aid of a reading laser.

4.2.3 The mechanical process

The video disc, which is already on the market, records in grooves (160 per mm) light, color and sound signals, through variations of depth and with a great surface density. These signals are reproduced with the help of a recording arm fitted out with a diamond point. The discs have a diameter of 21 cm. For a color film of ninety minutes' duration, 18 discs are needed, which fit easily into a film can.

4.3 Advantages as regards preservation

4.3.1 Elimination of color dyes

The just-mentioned systems and their variations have one thing in common: for the rendering of color, no dyes are needed, but only signals that are recorded optically in black-and-white, through holographs or mechanically. This means that the uncertainty factor, i.e. color dyes, no longer plays a part, and furthermore that through these systems color films have a life expectancy equal to that of a black-and-white acetate film.

4.3.2 Stability of the picture discs

Video discs appear to be especially suitable for preservation since they do not even involve the endangered medium, the film. It is still too early to say how the discs will keep when stored permanently. What is certain, however, is the fact that their life span is much longer than that of the audio-visual electronic communications devices now in use.

4.3.3 The most recent developments

There exists the possibility that the picture discs and the other systems that have been developed have already been superseded as a result of more recent research. There is talk of storage possibilities that will permit several billion bits (i.e. the smallest unit of information) to be stored in the space of one cubic centimeter. For the storage of information ultra-violet light is used. Scanning is carried out by means of laser beams. At the present time this system only permits the storage of contrasting light and dark, i.e. the computer language. This development is still in its infancy, but there is a possibility that this method may in the future solve many curatorial problems.

4.3.4 The cost of adopting new systems

Although we are talking here of new possibilities that actually exist, we must nevertheless warn against the uncritical adoption of *any* new invention that turns up. Every change of this kind involves the changing-over of the entire holdings of an archive and at the same time the acquisition of new equipment, at least for testing, restoring and projecting. There can be no question but that this is going to be very expensive.

Consequently, one has to investigate very carefully whether a system offers the necessary safeguards for preservation; whether it can be used on a large scale, and whether the transformation of the entire holdings and the installation of new technical equipment is

financially possible. It is out of the question that this can be achieved through private funding. Here one has to arouse the interest of public authorities who have the means to finance with public funds the preservation of records of historical and cultural importance. In considering the economic aspects, it must be realized that all methods of preservation now in use are unreliable and very expensive. Therefore, the new systems must offer a higher degree of dependability, and they may well permit the recovery of the invested capital faster than does the present system.

5 THE PERMANENT STORAGE OF AUDIO-VISUAL COMMUNICATION DEVICES PRESENTLY IN USE

5.1 Storage

In view of what has been said about the structure and qualities of the holdings presently in the archives, it is evident that in a well-equipped archive for audio-visual materials three different types of storage vaults are needed.

5.1.1 *Storage vaults for acetate film and magnetic tapes*

The optimal climatic conditions for the storage of such material is a temperature ranging from $+6^{\circ}\text{C}$. to $+12^{\circ}\text{C}$.; relative humidity: maximum 60%; the influx of fresh air: 5 - 8%.

Whether or not this type of vault calls for air-conditioning depends on the difference between the inside and outside temperatures. For material removed from the storage vault, the dew point may not be exceeded, and thus air-conditioning is advisable.

When magnetic tapes are stored in the same storage vault, it is essential to ensure that no fields of interference arise. Magnetic tapes should always be stored in metal containers.

5.1.2 *Storage vaults for nitrate film*

Optimal climate: maximum $+4^{\circ}\text{C}$. $\pm 2^{\circ}\text{C}$.

Relative humidity: maximum 60%.

Influx of fresh air: at least 20%, so that nitrate gases which have formed may at once be diverted to the outside. Air-conditioning is absolutely imperative.

If an archive has only small holdings of nitrate film left, it is preferable, and also cheaper, to copy these holdings on to acetate film and to destroy the endangered nitrate material.

5.1.3 *Storage vaults for color film*

Optimal climate: maximum -5°C .

Relative humidity: maximum 30%.

The influx of fresh air should be limited to the cooler hours of the day, but should not be omitted altogether.

Acclimatization is absolutely necessary when material enters the storage area or is removed from it. In order to keep the temperature at the correct levels, it is necessary to have conditioning chambers and adequate insulation. All parts of the building that are underground must be heated from the outside.

5.1.4 Emergency solutions have been discussed under No. 2.5.5.2.

5.1.5 A model storage compound ideally should have two vaults of each of the above-named types — one for original or near-original material (original negatives, duplicate positives), and one for positive copies. At this point it is instructive to recall the conflagration in Canada, where negatives and positives of the same film were stored in the same area. Both were destroyed simultaneously, and thus all films not represented in other archives were irretrievably lost. Though the costs are high, there is at the present time no other solution. As a minimum precaution, storage vaults for positives and those for originals or near-originals should at least be separated by

fire-proof walls, and one should see to it that fire cannot spread by way of the roof.

5.2 Inspection of the holdings

Because of the low stability of the materials, holdings of an audio-visual archive have to be inspected constantly.

Nitrate films should be inspected annually, except where the film stability test (see No. 2.3.1) has been applied and the results indicate the necessity of testing at more frequent intervals.

All other types of material should be inspected every two to five years, depending on their age and provided they are stored under optimal conditions.

The inspection takes place at the re-wind table. The rewind equipment should not permit a higher speed than 800 meters per hour. The rolling back of the film should be done at the same slow speed. Winding or unwinding at any higher speed makes even a superficial inspection, using hand and eye, impossible, and furthermore the reels will be wound too tautly. At present, no satisfactory electronic inspection device exists for films.

Whenever a film is inspected, it should always be cleaned of dust and dirt. Each reel should be spot-checked for:

- Stickiness and other indications of decay

- The stability of the splicing

- Discoloration of black-and-white film

- Color balance in color films

- Mechanical damages (scratches and perforations)

- Shrinkage

- Growth of fungi and bacteria

Minor damage should be attended to at once; if necessary the film should undergo regeneration, consisting of washing, cleaning, treatment with chemicals and, where indicated, polishing. The most satisfactory cleaning equipment, which takes care of several of these processes at a time, is found in the Gosfilmofond in Moscow. Such equipment can considerably reduce the amount of time needed for regeneration.

A record of the inspection results must be maintained and the technical data entered on file cards.

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Chapter IV

Film Cataloguing

*By Eileen Bowser based on the publication
FILM CATALOGUING, 1979*

1. INTRODUCTION

Cataloguing is the gathering, assessment, and systematic arrangement of information about the films held by the archive. It is a vital and complex task, upon which the entire operation of the archive depends. Without comprehensive and well-organized data, an archive cannot effectively preserve or make use of its holdings. Unlike books, films are not easily handled. They require special viewing equipment and a fixed amount of time for viewing. Film is fragile, easily damaged, and in the case of nitrate films, highly inflammable. To avoid unnecessary handling, and to efficiently control and use the film collections, it is essential that the archive provide systematic and accurate catalogues, indexes and documentation. In 1968, at its London Congress, FIAF established a Cataloguing Commission to study the common problems of this task. The Commission has prepared a manual, *Film Cataloguing*⁽¹⁾.

⁽¹⁾ FILM CATALOGUING. Prepared by the Cataloguing Commission, FIAF. New York: Burt Franklin + Co., 1979.

This is a gathering of experiences of FIAF archives and a detailed discussion of the basic summary of the principles of archival film cataloguing, with numerous examples, and it is recommended for study by all archives intending to set up a cataloguing system. The present chapter, therefore, will only outline some of the basic considerations.

1.1. Staff

Cataloguing is a special kind of research work. It involves decision-making at an important level, and it requires qualified personnel. Cataloguing cannot be performed as a mechanical task by unskilled or clerical workers. Until professional training for film catalogueers has been more widely developed, experience indicates that education in history, fine arts or cinema, or related disciplines, such as librarianship, information science, museology, or archival science, provides a good background. The cataloguer also needs practical experience in the handling of film. When an archive is in the beginning stages, it may be useful to arrange an internship for its cataloguer at one of the older, more established film archives with experiences in cataloguing.

1.2. Equipment

Films must be examined for cataloguing purposes, and the recommended means is a viewing table, which permits the stopping of the film whenever needed. It is difficult if not impossible to record all the necessary information during a screening in a darkened projection room. The cataloguer must have sufficient training to be able to handle the various kinds of film on the viewing table without damaging them, and special precautions must be taken for the handling of nitrate film.

1.3 Location

The cataloguing process includes gathering information from

the film itself and also from the written sources. The archive's vaults are usually located at some distance from the main offices and the documentation resources. While access is needed to only one film at a time, the cataloguer may need all the resources of documentation at hand, and for this reason it is advisable to locate the cataloguing department adjacent to documentation. On the other hand, the technical data files should be located where the films are technically examined, and the dispatch or movement file should be kept at the vaults.

2. PURPOSES OF THE CATALOGUE

The archive should make some basic decisions at the start about the purposes the catalogue are to serve. A small or beginning archive needs realistic and practical goals within the archive's possibilities, because an «ideal» catalogue is likely never to be completed and thus not able to be used. Cataloguing should be thought of in stages, the first on a very limited level but comprehensive for all the films in the collection, and the second stage the cataloguing of the films in a detailed way, to serve additional needs.

2.1 Stock control

The film collections are the most valuable assets of the archive, and therefore it is most important at the beginning to establish a system of stock control, usually an accessions register, which uses a numbering system applied to each print, negative or finegrain acquired. As each type of film base requires different storage conditions, a numbering system may be devised which relates to various categories. However, it is generally not advisable to use the numbering system primarily as location indicators, as this limits the ability of the archive to rearrange its stock without renumbering.

2.2 Preliminary cataloguing

Immediately after a film is acquired, a record should be made of the details of acquisition, the title on the film or container, the number of reels, and the gauge. It is then ready for technical inspection. The film should be inspected to ascertain the base type, emulsion, and obvious signs of decomposition. Very dirty material should be cleaned, and rusty or damaged cans replaced. The film should be tightly wound, emulsion out and head out, ready to go to the cataloguer. As a minimum, the vault technicians should ascertain and record the following technical data:

- 1) number and length of reels
- 2) gauge of film or videotape
- 3) emulsion type (negative, positive, finegrain)
- 4) base type (nitrate, acetate)
- 5) physical condition (perforations, splices, scratches, dirt, decomposition)
- 6) color, tinted, or black-and-white
- 7) silent or sound
- 8) image and sound combined, or separate
- 9) date of technical inspection and name of inspector

3. CATALOGUING

For a basic catalogue, the creation of files arranged as follows is recommended:

- 1) original titles in alphabetical order, with cross references from any other titles known (the definite or indefinite article should be disregarded in filing);
- 2) for series and serials, alphabetical listing of series titles, with individual releases by number or in chronological order (with cross references from the sequence titles in newsreels).

3.1 Basic information

The following minimum filmographic data is considered necessary for each film:

- 1) original title
- 2) country of origin
- 3) director
- 4) production company
- 5) year of production
- 6) language of film and subtitles

For basic filmographic information on newsreels and magazines:

- 1) original title and number of issues
- 2) country of origin
- 3) production company
- 4) date of release
- 5) one descriptor per sequence

3.2 Detailed information

The collection of detailed filmographic information should, in the first stage, be concentrated on national productions. In any case, detailed cataloguing should be considered as a second step, to be undertaken only after complete coverage at a less complex level. Undertaking too detailed a cataloguing procedure at the outset may delay for too long a period the complete coverage of all the films in the collection.

3.3 Sources of filmographic information

The film itself is to be regarded as the primary source of information. However, caution must be used when examining a foreign or reissue version, which may not have the original credits or may contain errors in transliteration from other languages. Information taken from the film may be checked against documentation materials, such as scripts, scenarios, cast lists, studio stills, publicity

material, and reviews. For some types of information, such as the date of first public showing, the written materials are the primary source. Experience shows that information from secondary sources runs the risk of serious inaccuracy. Whenever possible, the film itself should be used. Secondary sources should always be acknowledged as such. The source for information should be recorded.

Filmographies are essential to the work of an archive and for historical research. FIAF has recommended that a national filmography be undertaken in every country, which shall be comprehensive for the national production and exclude foreign production. When complete and accurate filmographies exist, the work of the cataloguer is greatly facilitated and duplication of effort is avoided.

3.4 Indexing

All filmographic data may be indexed. The necessity for indexing depends on the demands made on the archive and the resources available. While comprehensive indexing minimizes the time required to locate information, for many archives it may not be necessary. However, as a minimum, it is recommended to make indexes arranged according to (1) director; (2) country of origin; (3) year of production.

3.5 Description of film content

Description of content should always be in as objective a style as can be achieved. If the internal function of an archive requires the inclusion in its catalogue of subjective assessment of a film, such comments should always be acknowledged as such, and clearly distinguished from the objective information. Whenever possible, the film itself should be viewed to ensure the accuracy of the description, rather than accumulating subject information from secondary sources. Two methods are used for content description, the narrative method or the descriptive method. The first is usually applied to fiction films; the plot is described and characters identified as they appear. The content of each reel may be given, or

a short summary of the entire film. In a non-fiction film, the descriptive method is often used instead, dividing the contents into broad categories using descriptors which may be selected from a formal thesaurus.

As a minimum, it is recommended that the archive give a brief summary of each film, including the time and places of action and a one-line description of content. However, each archive must make its own decisions on the coverage of subject content, according to its needs, goals and resources.

3.6 Subject classification

No generally accepted subject classification has yet been devised. Two approaches have been attempted:

- 1) the film genre (however, internationally-accepted genre categories do not yet exist),
- 2) classification of film content, usually according to the Universal Decimal Classification (UDC). It is recommended to use UDC for its facility in international exchanges of information, but that the schedule be limited to five digits. Some archives have devised their own hierarchic systems for subject classification.

4. SUPPLEMENTARY FILES

In addition to the main catalogue, it will be necessary to create special purpose files, such as technical data records, location information, and film movement records. The number of such supplementary files will depend on the organization and needs of the institution. It is recommended that beginning archives investigate the systems in use in established archives. For supplementary files, filmographic data may be limited to that which is necessary for identification of the film. For the filmographic records of the main catalogue, it is necessary to record the data only once for each film title, but the supplementary records referred to here require that the data be recorded for each separate copy of the film held, prints,

negatives, and finegrain masters, as the information may vary from one copy to another.

4.1 Technical data records

These records are maintained by the technical department. The data to be recorded divides itself into fixed data and the changeable data:

Fixed data:

- 1) length (per reel, total length, with and without titles, etc.)
- 2) gauge of film or videotape
- 3) type of emulsion (negative, positive, finegrain)
- 4) type of base (nitrate, acetate, polyester)
- 5) sound system (optical, magnetic), (combined or separate)
- 6) color system
- 7) type of perforation
- 8) manufacturer of film stock
- 9) processing laboratory

Changeable data:

- 1) physical condition
- 2) tests of chemical stability
- 3) dates of technical inspection

4.2. Film movement records

Experience has shown the value of a system to record the movement, or dispatches, of the film from its storage location. This may be necessary only for the sending of film outside the archive, but in archives with large collections or with widely separated departments, it is advisable to include internal movements as well. The data to be recorded may be a bare minimum, sufficient to identify the film copy and its location, the user or the purpose of the move, the date and place of dispatch and the date of return of the material. In most archives a record exists of the location of each copy, which is removed from the file while the film is out and is returned to file when the film returns.

5. STORAGE AND RETRIEVAL OF INFORMATION

The data of the film catalogue may be stored and retrieved by manual means, mechanically, or electronically, or by a combination of these.

5.1. Manual systems

The oldest and most widely used system is the traditional card file, as used in book libraries. It consists of a main entry or master card, accompanied by a series of index files. It should be remembered that the main entry card for a film will usually contain much more information than that for a book, and the size as well as the durability of the card selected is an important consideration. The index files may be created by making multiple copies of the main entry card by photocopies or special typewriters, or by making separate cards headed by the index term and containing a reference to the main entry card. Creating indexes by manual means is time-consuming, and demands sufficient storage space for the cards. While most beginning archives will find that the manual system is the simplest and cheapest method, the newer methods should be investigated. Depending on the goals and possibilities of the archive, it may be that mechanical or electronic means will be found less costly in the long run.

5.2 Mechanical systems

In these systems, the data to be indexed may be marked by notching, drilling or punching cards, and retrieved by various mechanical means. This gives more rapid access to data, and greater flexibility in retrieval, since the index terms to be searched are combined only at the time of search. Punching equipment that is fast and accurate in operation may be expensive, but running costs are economical. In some systems, the index information has to be coded. Mechanical systems are not yet in wide use in film archives.

5.3 Electronic systems

In a small but growing number of archives, the data of the film catalogue is being entered in computers. Unlike the manual and mechanical systems, which may be operated by the normal archive personnel and within the archive, the computer is a highly sophisticated information retrieval system which demands specially-trained staff or the help of outside experts. Few if any archives will own their own computer: rather, they rent time on a computer owned by another institution. A distinction should be made between «on-line» and «off-line» use of the computer. «On-line» implies direct and continuous access to the computer, and might be used, for instance, as an electronic index for answering specific questions on demand. Such a system is very expensive in operation and is likely to remain outside the financial possibilities of most archives for many years. «Off-line» implies occasional access at cheap «off-peak» hours. During this very short time period, the computer is used to update the data files, and print out technical data lists, catalogued entries, lists of index terms, etc. The work is achieved at very high speed, and thus this is a much more economical use of the computer data base.

The computer has the great advantage of extreme flexibility in the sorting of data and the very short time needed to create extensive index files. However, it requires much higher standards of exactitude in terminology and vocabulary. Furthermore, the greater the complexity and capacity the system incorporates, the greater the effort required in the initial design of the program. Archives contemplating the use of the computer should investigate programs in use in other institutions, to discover if one of them can be adapted to their specific needs, since the creation of a program is the most expensive part of the process. When a program is created or adapted, it is necessary for the professional archive staff to strictly oversee every decision to be made and not to leave these to the computer experts on their own. Since the computer is capable only of logic, the human user can rely only on logic, and can use little of the intuition and judgement that he employs, often unthinkingly,

when consulting a conventional card index. Strict discipline is required to achieve acceptable results with a computer-based system. Any level of mechanisation tends to involve a move away from natural language, and translating natural language into the computer's format inevitably involves subjective judgement, and therefore loss of precision. This is particularly true when the data concerns subject content. It is necessary for an archive to pay very close attention to vocabulary control if it wishes to index the subject content of films.

6. SECURITY OF CATALOGUES

All catalogues, whatever system is adopted, should be kept in locked areas or cabinets, with adequate fire protection. Public access to the catalogues is an administrative decision. But if this is contemplated, great care must be exercised to avoid any loss of items which could prove very serious when viewed in terms of the time and effort involved in creating them. The misplacing of a record of a film may be the same as losing the film itself, in terms of using or preserving it. The creation of duplicate copies is highly to be recommended. It may be microfilmed, and the microfilm placed in very secure conditions. One advantage of a computer system is the ease and low cost of producing multiple copies.

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Chapter V

The documentation department

*By Eileen Bowser, Brenda Davies, Karen Jones,
and Anne Schlosser of the FIAF Documentation
Commission, with an additional contribution by
Nico Diemer of the Nederlands Filmmuseum.
Edited by E. Bowser.*

1. INTRODUCTION

The purpose of the documentation department is to collect, preserve, and make available all materials relating to the cinema. It may first come into existence to serve the immediate needs of the archive for information needed for selecting, acquiring, cataloguing and programming films but once a body of information exists, the archive will usually have the responsibility to make it available to a wider public. Factors to consider when setting up a documentation department will include the determination of the needs of the community, and whether there are already existing documentation centers which can meet these needs. If an archive has the only major film documentation center in the nation, then it will have primary responsibility to collect all materials concerning the national production. The scope of such a collection can be even broader than the film collection of an archive, since the costs are less. However, duplication of effort is wasteful, and collaborative schemes should be worked out with existing institutions. On an international scale,

for instance, FIAF already has in operation *The international index to film periodicals* (2.4.5.), and a similar collaborative scheme is in the planning stages for the exchange of filmographic information on the national production (4.2.1.). Archives can save a lot of work and at the same time make positive contributions to the work of film documentation by participating in such projects, on both a national and an international level. Any interested archive should contact the FIAF Documentation Commission, through the FIAF Secretariat in Brussels, for information about these projects, as well as about any specific documentation problem.

1.1. Organization and staffing

Trained specialists are needed in all areas of documentation work. However, if the small or beginning archive can afford no other documentation specialist, the most necessary is the professional librarian. The organization of a documentation department in a small archive might put the librarian in charge of all the specialized areas of film documentation. However, if there are larger possibilities, there could be several separate divisions, according to the different kinds of materials, with a chief documentation expert responsible for the operation of the whole.

2. THE LIBRARY

At the center of any documentation department is the library.

2.1. Physical requirements

The most important factor to consider is that a good archive library will constantly acquire new materials. Enough space must be provided for growth, or the library will shortly run into severe problems and will have to store valuable materials in inaccessible storage locations. The library should be conveniently located, yet it must be in a quiet place, conducive to concentration. Proper lighting

and sufficient electrical connections for equipment are essential. Good ventilation and constant temperature are necessary for the comfort of the users as well as the preservation of the collections. Stacks should be maintained at an approximate temperature of 21° centigrade (70° fahrenheit) and at a humidity of 60 to 65%. Similar conditions are recommended for storing most documentation materials (posters, stills, etc.) for which the department as a whole will be responsible. Before installing equipment, an architect should be consulted regarding the capacity of the structure to support the weight of books, shelves and cabinets. Before deciding what kinds of equipment and furniture to buy, it would be useful to visit other archives and libraries to compare items in actual use.

A library usually divides its space into four areas of activities:

- 1) The service area. Located at the entrance, this area may contain the card catalogues and the circulation (or charging) desk.
- 2) The reading area. This may contain current periodicals, the reference collection, microfilm readers, typewriters, tables and chairs. It should be subdivided to provide some areas with more privacy, for prolonged research projects.
- 3) The storage and stack area. This may include an open stack section near the service area, and a closed section for materials not for loan, near the reading area.
- 4) The work area. Here the library staff copes with the tasks of acquisition, cataloguing and classification.

2.2. The budget

The initial costs for setting up a library must allow for the purchase of the basic collection and for the equipment and furniture. It may be advisable to allow a sum for travel, in order that the librarian may learn from experiences in other archive libraries. Temporary extra help may be needed to organize the newly-acquired materials for use. The archive's operating budget must contain an entry for the library to ensure its day-to-day operations and to allow for growth: there should be sums planned for existing commitments

to standing orders, binding costs, the purchase of new books and new periodical subscriptions, valuable collections which become available, and the extension of service.

2.3. Books

2.3.1. Acquisition

A number of factors need to be taken into consideration when determining an acquisition policy. If the library is the only specialized film book collection in the country, it should aim at building as extensive a collection as economics permit. This could be as many as 26,000 books, the approximate size of the largest film book libraries at this time. If the library expects to serve the needs of a film school or a nearby university, this will influence the kind of books to be bought and whether duplicate copies will be needed. The library must decide whether it will try to include any related fields, such as photography, theater, fiction, and history. It probably should not do so if these areas are already covered by local libraries and until it has adequately covered the literature of cinema and television. The languages which are commonly used in the country will, of course, influence the acquisition of books. When a budget is limited, the library might limit its acquisition in other languages to those books useful chiefly as reference works, such as national filmographies, directories, encyclopaedias, etc.

2.3.2. Sources

Most archives receive donations now and then, which is a good way to acquire old and rare materials. Duplicate materials may be exchanged with other archives. However, a regular system has to be devised for keeping up with new publications. The following sources could be consulted in a regular and systematic manner:

- 1) The book reviews and announcements in current film periodicals.
- 2) The catalogues of publishing houses specializing in film literature.

- 3) The catalogues of major booksellers, such as Cinemabilia (New York), Larry Edmunds (Hollywood), Hans Rohr (Zürich), and Le Minotaure (Paris).
- 4) Annual bibliographies (see (5.2.) LIST OF USEFUL SOURCES, items (17), (18) and (26).)
- 5) The general national bibliographies, such as *Cumulative book index* (USA), *British national bibliography*, *Deutsche Nationalbibliographie* (GDR), *Deutsche Bibliographie* (FRG), *Biblio* (France), which can be examined at other libraries.
- 6) Accession lists published by archives.

2.3.3. Ordering

There are several ways of buying books. The librarian may choose one or more local booksellers through whom all books will be ordered. This saves time and paper work, but it takes longer to acquire foreign books and usually is more expensive. Instead, one may select one specialist bookseller in each major country, which usually results in faster service and a lower price, but involves direct payment in foreign currencies. Books may be ordered directly from publishing houses, which is to be recommended in the case of small publishing houses whose books might be difficult to get hold of elsewhere. However, it will not succeed in many cases with the major houses because they are not willing to deal with small orders, which will be referred to a local bookseller. Most booksellers offer a special library discount between 10-25%, especially if the library is a regular customer.

The ordering should be done in an effective routine. After a book is recommended for purchase, the usual procedure is to complete an order form. It is desirable to have a form which may be used for multiple purposes, including accessioning, to save labor. An order form might be in the standard format 7.5 cm × 12.5 cm (3" × 5"), with several copies, preferably printed on NCR paper. Library suppliers have standard order forms or the library might have one printed to meet special requirements. The order form is completed with full bibliographic data, number of copies wanted,

name of dealer, date ordered, published price, source of reference, etc. At this point it should be checked that the book is not already in the library, in the process file, or on an earlier order. One copy of the form is sent to the bookseller, another is kept in an order record by the name of author, and if the library deals with more than one bookseller, a third copy might be kept in another order by name of dealer. When a book is received, remove the order form from the order record and write in the date received and the price paid. As most libraries still maintain an acquisition record, the book is usually entered there, supplied with an accession number, and stamped with the name of the library. To save labor, the accession number of the book can be entered on the order form, which is then filed in the acquisition file in numerical order by accession number. As well as adding this number in the book itself, it is also entered on the main entry card after cataloguing. In large libraries, it is often useful to keep another copy of the order form in a process file until the book has been catalogued and the cards have been filed in the card catalogues.

2.3.4. Classification

After the book has been entered in the acquisition record, it should be classified. Classification has been defined as:

"sorting and grouping together books related to a broad subject category. In a classification scheme main classes are followed by divisions and sub-divisions of these classes, and the graduation of subjects is so arranged that specific subjects grow out of general subjects. As books often treat a subject from different perspectives, the scheme should be flexible to permit a combination of ideas. It should be expressed according to national symbols indicating their arrangement on the shelves. The notations should be such that they can be conveniently written on books and easily remembered."

Several classification schemes which exclusively deal with the classification of cinema literature have been worked out. Most of these are described in R. Steele's *The cataloguing and classification*

of cinema literature (14). However, none of these schemes are to be recommended. The FIAF Documentation Commission established a working party in 1972 to produce a more practical scheme, and in 1977 the Commission adopted as a recommendation *The FIAF classification for literature on film and television* by Michael Moulds (78). It is published in a full version together with an abridged version for smaller collections.

2.3.5. Subject analytics

Classifying a book according to its subject is not always a simple task. Before it can be classified properly, a book must be examined for the information given on the dust cover, in the table of contents, and in the introduction. When the general subject of a book can be divided into useful specific headings, the book should be further analyzed. In a film book library it is especially important to make analytical entries under specific film titles, personalities, and other subjects of interest. However, such entries should only refer to information of some length (more than a couple of pages), or the quantity of material will become overwhelming, and the more important items will tend to get lost in the body of information.

2.3.6. Cataloguing

When a book has been classified, the information about the book is transferred to a card, according to set rules. As these rules differ from country to country, it may be desirable to use the cataloguing rules of the country in which the archive is located. Standard-size catalogue cards are recommended: 7.5 cm × 12.5 cm (3" × 5"). Catalogue cards may be typed, but as several copies are needed, this may prove too expensive a method, because of the labor involved. However, various mechanical means of reproduction are available, including stencil and spirit duplicating machines or photoduplicating equipment. The cards to be made usually include: author cards (which may be the main entry cards), title cards, subject cards, analytical entry cards, series cards, etc. It is necessary

to keep a record of the cards made for each book, which is usually entered on the back of the main entry card. However, if many analytical entries have been made, it will be necessary to maintain this record elsewhere, in a special file.

2.3.7. *Arrangement of cards*

The card catalogue will normally list the materials held in the library by author (or editor or compiler), title, series, and subject. There are several types of card arrangements. In a dictionary catalogue, the entries of different types (author, title, subject, series, etc) are all arranged in one alphabetical sequence. In the divided catalogue, all the subject cards are filed in one sequence, systematic or alphabetical, and all author, title and series entries are filed in another. In a special library, such as a film book library, the divided catalogue is preferred.

The subject catalogue can be arranged in numerical order by classification notation or in alphabetical order by subject heading. The numerical order by classification notation is preferred, because related subjects are filed together. It is advisable to make an alphabetical subject index to the classified file, giving the classification number for each subject. The alphabetical order by subject heading is used by some libraries. However, the drawbacks should be considered: related subjects are separated and material is difficult to locate as the user does not think of the right word associations. Too many "see" and "see also" references tend to create confusion.

2.3.8. *Arrangement of books*

Books may be arranged on shelves in numerical order by classification notation, special subject location number, accession number, or in numerical order by size. The first one, numerical order by classification notation is preferable in an open access library, because all the books concerning the same subject are stored together, an arrangement which makes it very easy for the readers to

use the library. Within each subject category the books are stored alphabetically by name of author. A "call number" (usually the classification notation followed by the initials of the author's surname) is written on the spine of the book to simplify the arrangement. The numerical order by a special subject location number is used by some libraries which prefer to use the elaborate classification notation for the card catalogue only, and to apply a simplified notation to the arrangement of the books on the shelves. Books on related subjects are still stored together, but in broader subject categories. If this system is employed, users might find it difficult to distinguish two different numerical systems. Finally, the numerical order by accession number or by size is used by some libraries with closed access. It is the most economic way of storing books. It is not recommended as it is necessary always to consult the card catalogue in order to locate a book. Some libraries also find it useful to keep a record of the books in the library arranged in the order of the books on the shelves. This "shelf-list" is mainly used for inventories. However, as most libraries have abolished inventories altogether, there is no real need for this type of record.

2.4. *Periodicals*

Periodicals, because they record contemporary opinion and current factual information, are one of the most important resources for the archive library.

2.4.1. *Selection*

When deciding which periodicals to subscribe to, the librarian should consult published lists, such as the list of periodicals indexed by the FIAF *International index to film periodicals* (56), A. Reilly's *Current film periodicals in English* (28), the Venice catalogue (26), and Ulrich's *International periodicals directory*. Sample copies of periodicals for evaluation can be obtained from bookseller or publisher, or through interloan. The selection should be as comprehensive as funds permit. The different types, critical, filmographic,

trade, technical and fan magazines, should be represented in order to meet aesthetic, critical, historical, technical and sociological demands, and as many of the national cinemas as possible should be represented. If there is a very limited budget, priority may be given to critical and filmographic periodicals and to languages in common use in this country. Another priority may be given to acquiring back runs of periodicals. Back numbers are very often out of print, and must be obtained from second-hand dealers or in microform if they have not been reprinted by the publisher or a reprint firm.

2.4.2. *Acquisition*

Periodicals are acquired by subscription, exchange, or as gifts. Subscriptions can be placed either directly with the publisher or with a dealer or agent who has experience in handling subscriptions for periodicals. The latter method is more expensive but saves work on the part of the archive staff, as the dealer will assume responsibility for placing the order, claiming missing issues, and notifying the library when subscriptions fall due. If the archive is the publisher of a periodical, an arrangement to exchange periodicals with other archives might be obtained. Some periodicals, especially those published by national export organisations, can be obtained as gifts.

2.4.3. *Recording*

A visible index card should be prepared for each periodical title the library receives. Commercially-produced cards are available for different frequencies of publication, but a standard ruled visible index card is sufficient. Details recorded on each card include: title of the periodical, publisher and address, frequency, renewal of annual subscription, source, record of payments, record of claims, classification number (if used) and notes regarding binding, cutting or discarding. As each issue arrives, record the year, volume number, and date received. Then stamp each issue with the name of the library. Regular checking must be done to ensure that all issues

are received. A duplicated letter or specially-printed postcard should be prepared for sending claims to the agent or publisher. Claims should be sent as quickly as possible once it is noted that an issue of a periodical has failed to arrive, since the more time that elapses the more difficult it is to replace missing issues.

2.4.4. *Classification and cataloguing*

Periodicals can be classified so that books and periodicals in the same subject field are placed together in the card catalogue. As there is no author for a periodical and the editor changes, the main entry of a periodical is the title. In addition to the main entry card and the subject entry card, it is useful to keep a record of periodicals by country of publication.

2.4.5. *Analytical indexing*

As periodicals contain a lot of valuable information which is difficult to locate, it is extremely useful to index the content of all major periodicals. Periodical indexing has now been simplified through international cooperation. In January, 1972, the FIAF Documentation Commission launched the *International index to film periodicals*. Approximately 85 periodicals, selected as serious contributions to film literature, are indexed by 25 member archives, each indexing one or more periodicals published in its own country. Entries are sent to the Editor, who prepares the copy for duplication on standard cards, 7.5 cm × 12.5 cm (3" × 5"). Dispatches of cards are mailed every week from the London office to the subscribers, both FIAF member archives and other institutions throughout the world. The cards consist of three types: (1) general subject cards with heading in English, with space left at the top of the card to give each library the possibility of choosing filing systems, alphabetical or systematical, or to translate into a more useful language; (2) film cards, which carry the original title of the film as subject heading followed in parentheses by the abbreviation of the country of origin, the name of the director, and the year of

first public showing; and (3) personality cards which carry the name of the person as subject heading. The issued cards are published annually in book form. In 1979, an index to television periodicals was added to the card service.

Inquiries about subscriptions and the publications issued in connection with the project (74) (75) (76) may be made to the FIAF Secretariat.

The FIAF Index plans to include more periodicals in the future, but until then archives having the possibility will want to index other periodicals not yet included, especially such of their national periodicals which may have more local than international interest. In these cases, it is recommended to use the same card size and system as the FIAF scheme, in order to be able to interfile the cards. Retrospective indexing of periodicals is also extremely useful, but one should take care to avoid duplicating work already done. Section 5.2. contains some bibliographies of periodical and newspaper articles, which will be found helpful in the daily work of the department.

2.4.6. Preservation and shelving

Individual periodical issues are stored on shelves or in a box file until all issues of the volume are received, at which time it is sent to the bookbinder to be bound. Overheavy volumes should be avoided by splitting volumes into manageable sections. The latest issue may be on display in the reading room, in order that readers may become acquainted with current periodical literature. Certain periodicals which are printed on very fragile paper can be strengthened by lamination or plastic binders. If a periodical does not contain sufficient important material to justify binding and storing, the most useful articles can be clipped and kept in the cuttings file (2.7.) or a single issue of a periodical may be treated as a pamphlet (2.5.). Bound periodicals are usually shelved alphabetically by title of periodical. Another possibility is to divide them by country of publications, and use the alphabetical title sequence within each division.

2.5. Pamphlets

Pamphlets are publications consisting of a very limited number of pages, usually not more than 30-40 pages. They may be independent publications, or extracts from a book or periodical. It is not economic to bind this kind of material separately. They may be stored in vertical file cabinets, in box files, or in stiff plastic or cardboard binders (covers) on shelves. If sufficient pamphlets are collected on a specific subject or related subjects, they can be combined and bound as a book. However, pamphlets are otherwise treated exactly like books, following the same acquisition, classification and cataloguing procedures. All cards in the catalogue can be marked "pamphlet collection".

2.6. Scripts

Published scripts are usually treated as books. This section is concerned only with unpublished script materials, including original scenarios, shooting scripts, dialogue lists, post-production continuities, etc. Such materials provide a record of the national film and television production.

2.6.1. Rights

Most unpublished scripts are the property of the production company. If the archive is to obtain the cooperation of the studios to make these materials available for study, it must be able to assure the company that it will protect these rights. Users should not be permitted to take copies out of the archive, nor to make photocopies, nor to quote in published works, without the consent of the owner. It might be useful to have a stamp prepared, in order that the restrictions may be clearly indicated on every script.

2.6.2. Acquisition

In countries with a nationalized production, it is often possible

to make an arrangement whereby all script materials are automatically deposited in the archive. In other countries, it is necessary to keep in constant contact with filmmakers and production studios, requesting copies of scripts of all important productions. It is usually possible to acquire scripts in this way without purchasing them. Sometimes a company may be persuaded to deposit its backlog of scripts in the archive, or a director, screenwriter, or actor will donate his own collection. Duplicate copies may be exchanged with other archives that observe the same restrictions as to their use.

2.6.3. *Cataloguing*

While scripts may be shelved like books, they require special cataloguing. It is recommended to use the title of the completed film for the main entry, rather than the authors of the screenplay or the title of the script. Minimum cataloguing of scripts serves to identify the film, and therefore includes the original title of the film, the country of production, the director and the year of the film's first public showing. A better system will also give details about the script itself, its size, number of pages, type of material, date of the script, etc. In order to facilitate the exchange of information about script holdings, the FIAF Documentation Commission has prepared recommended standards for describing script materials, which are designed to avoid the problems of differing terminology and to make it possible to know which stage of the script is held. These standards might well be applied by an archive which is just beginning to catalogue its scripts. Copies are obtainable from the FIAF Secretariat (72).

2.6.4. *Storage*

As unpublished scripts usually exist in rare or unique copies, they must be protected from damage and loss. They should be stored in locked areas and used under supervision. If they are bound in covers, they can be stored under the same conditions as books. Standard library book binding is ideal but probably will be found too

expensive for a large collection. One possibility is to purchase in bulk inexpensive cardboard or stiff plastic binders with a pressure clip, in a size that will fit the standard script. Another solution is the cardboard box used in libraries for storage of pamphlets or unbound periodicals, but this will give less protection than the binders for individual scripts.

2.7. *Press cuttings*

A basic tool for an up-to-date information service is the press cuttings collection. Books and even recent periodicals are not able to supply sufficient information about the latest film production. As time goes on, a collection of press cuttings takes on an added value for its record of contemporary opinion on cinema.

2.7.1. *Acquisition*

Cuttings may be acquired from a professional clipping service, or papers may be clipped on a daily basis on the archive premises. If an archive should ask for all notices from the national daily papers on the subject of film, an extraordinary amount of paper would come in each day, and the staff would have to spend an inordinate amount of time selecting those worth filing and keeping. However, should the archive restrict its holdings to film reviews only, such a service might be practical. It should also be remembered that there will be a delay of some days before the cuttings from an agency are available for use. In most archives, it will be found preferable to have papers clipped by the archive staff.

2.7.2. *Selection of papers and periodicals*

The number of papers to be regularly clipped will naturally be limited by the archive's possibilities and priorities, but the goal might be to include all the national daily papers, weekly papers with a substantial film coverage, and the non-film periodicals with important film articles which would not normally be included in the

library's periodical holdings. Depending on language factors, it may be desirable to include some foreign press. If an important periodical is not yet being covered by the FIAF Index, publishes no index of its own, and can not be indexed by archive staff, it could be useful to include it in the press cuttings, subscribing to a second copy for this purpose.

2.7.3. *Selection of items*

The selection of items to be clipped is an important and responsible job. It is necessary to foresee what may be of interest not only at the moment but in future years. If the archive is short of trained staff, it is possible to have one specialist mark the items for others to clip. Some general principles of selection are:

- 1) Try to avoid items which are covered adequately in other sources available to the user.
- 2) Avoid very short uninformative reviews unless they contain the only opinions available.
- 3) Keep items of temporary interest only until more useful sources arrive.
- 4) Always bear in mind the processes each cutting has to go through to be used in the archive, and reject those items which do not have sufficient value to justify the staff time involved.

Archives sometimes find it useful to include in their cuttings files other items, such as program notes and publicity releases. As long as this is confined to items which are too small to be conveniently treated and catalogued as pamphlets (2.5.), the practice is a reasonable one. However, items having an intrinsic value, such as souvenir programs, should not be stored with items which are kept for information purposes only, for reasons of the security needed for valuable documents.

2.7.4. *Mounting*

Each cutting will need to have some sort of label or mount which will indicate the source from which it came, the date of

publication, and the author if not indicated on the cutting. The minimum labelling consists of writing directly and legibly on the item itself, but in practice, this system may result in illegible information.

2.7.5. *Classification*

The system to be used for organizing and classifying the cuttings collection should be carefully considered at the outset, and not permitted to grow haphazardly or at the idiosyncracies of the individual staff member. Most systems have in common the three main groupings: by original film title, by film personalities, and by subjects. It will probably be best to classify subjects under the system employed by the archive for the classification of film literature (2.3.4.). In that way, only one system has to be learned by the user. If desirable, the cards could be interfiled in the catalogue of the library, and each card stamped "cuttings collection", "vertical file", or other appropriate designation.

2.7.6. *Storage*

Newsprint is a fragile medium, subject to rapid deterioration, especially when constantly handled. The practice of pasting clippings on backing sheets is not recommended, as the glue may increase discoloration and hamper legibility. Excessive folding of newsprint in order to keep items in small envelopes or files will contribute to its deterioration. Cuttings kept loose in vertical files, large enough to avoid much folding, are easily accessible, and if not too many in a file, will avoid unnecessary handling. In time, however, such a collection will disintegrate and, moreover, will outgrow the available space in most archives. A number of archives now use microfilm for the solution to these problems (4.3.).

2.8. *Special collections*

There are other kinds of documentation materials which the

archive will find useful to collect: original manuscripts, correspondence of filmmakers, company production records, censorship records, campaign (press) books, music scores, cue sheets for the silent film, programs of cinemas, program notes, etc. We cannot take space in a basic manual to discuss all of them. Indeed, insufficient study has been made of some of these subjects to make recommendations. It can only be emphasized that it is of the greatest importance to acquire unique materials from filmmakers, production companies, film organizations and institutions. Such materials are primary sources of information, and will probably be lost if not collected by the archive.

Due to their bulk, manuscript collections are generally catalogued in the public catalogue as a single unit. The card describes the scope and nature of the collection as a whole, including dates, physical size, and notes regarding source and date of acquisition. The main entry is usually under the name of the collection, which may be the name of the collector or the subject, and subject entries are added for important large sections. More detailed subject classification is not recommended, as it becomes unwieldy. As for the arrangement and inventory of the manuscript collection itself, there are many different approaches depending on the type of materials.

Before access is given to restricted or valuable collections, users should be required to fill out a form which includes their name, address, date, and purpose of the research. Such collections have to be used under supervision.

Whenever practical, unique collections should be protected by microfilm (4.3.). Paper clips and staples should be removed from valuable papers to prevent rust stains. Storage should be in acid-free containers (3.2.5.) and under constant temperature-humidity conditions (2.1.). However, any special "treatments" should be left to the paper conservation experts (3.2.5.).

3. NON-PRINT MATERIALS

There are a number of documentation sources consisting of non-print materials which are extremely important for the film archive to collect. These include motion picture stills and photographs, posters designed to advertise the film or announce a series, taped interviews with filmmakers, slides, sets and costume designs, and filmstrips. In this section, we will discuss in detail only two of these, stills and posters.

3.1. Stills

A collection of motion stills has two chief purposes: 1) it is a research archive which serves as a visual record of films which are not available or no longer exist, or for identification of films or actors; and 2), to provide illustrations for publications on the cinema.

3.1.1. Acquisition

A collection of stills may be acquired from the publicity and advertising photographs issued by production companies, or by making photographs from the film itself. The first is the most common method. Publicity stills are easiest to obtain when a film is first released, and can usually be acquired at that time without cost from the production or distribution company. To acquire old publicity stills, an archive might offer to store the holdings of the production company. The publishers of film periodicals which have existed for a long time also sometimes have large stills holdings. Other sources are private collectors, dealers, and the exchange of duplicates with other archives. The various kinds of stills collected in this way may include scenes from films, photographs of the production crew at work, and portraits of directors and actors. All these are useful for illustrative purposes in publications. However, what appears to be an actual scene may often be only a posed photograph, and therefore of less value for research purposes. The

second method of acquiring stills, direct from the film, has the advantage of creating a more accurate record of the film and permits a choice as to which scenes will be recorded. If the archive is equipped with a laboratory for the purpose, the process need not be costly. It should be remembered, however, that any handling of the film risks scratches or other damage, and in any system of making stills, the protection of the film should be considered as of first importance.

3.1.2. Cataloguing and filing

In a very large collection or in a beginning archive, it may only be possible to catalogue in a minimal way. In that case, stills may be arranged alphabetically by original film titles for scene stills, by personalities for portrait stills, and by special subjects, such as photographs of studios, cinemas, and equipment. Each file or envelope will have an identifying label (labels are not recommended on original stills, even on the reverse side, because they may print through or mark the surface of an adjacent photograph). Index cards will be necessary for cross-reference purposes, for example, from release titles to original titles.

However, for maximum use of a collection, a systematic catalogue is necessary. In a basic manual, there is not space to describe the advantages of various systems, and the one that is chosen will have to depend on the uses to which the collection is to be put by the individual archive. For example, some archives classify contents of scenes, and others are interested in being able to locate all films by their directors, or to find scenes in which certain actors appear. Before undertaking elaborate cataloguing schemes, however, it should be considered whether the other resources of the documentation department can more efficiently supply these kinds of information. Until some published recommendations exist, archives considering a catalogue of their still collections would do well to inquire into the experiences of a number of other archives.

3.1.3. Identification

Most collections of publicity stills contain some without any identification. The resources of the library, especially illustrated books, may be of great help in identifying them, although the errors to be found in published works must be kept in mind. Every opportunity should be used to invite specialists and film historians to examine unidentified stills. When it is possible to identify an actor in a scene from an unknown film, the actor's name will serve as a temporary means of classifying the still. A possibility which is yet to be explored would be to systematically collect and organize the production numbers of films, which are frequently printed in a corner of the photograph by the production company. Many unidentified stills bearing numbers could then be given a name. This is a possible collaborative project for the stills departments of archives from which all could benefit.

3.1.4. Selling copies

In a number of archives, selling copies of stills is an important income-producing activity which may support the maintenance of the stills collection. Such activity should not be permitted to outweigh in importance the use of the collection as a research archive. The copyright for reproducing stills is often claimed by the company which produced the film, and it is necessary that the archive respect such rights. The purchaser must be made to understand that he does not have the right to reproduce or publish the photograph without the permission of the copyright owner. The safest way to ensure this is to stamp each copy sold, on the reverse side, with the restriction.

In some archives, a commercial laboratory is used for making copies, but an archive should investigate the possibility of having its own photographic laboratory, which may not only be less costly, but will result in a better control of the process. Such a laboratory may also serve to make stills from the film (3.1.1.) and contact prints can be made to avoid undue handling of the originals and to identify negatives.

Each archive must establish for itself a policy as to what kind of users shall have access to the stills collection. If users want a favorite still to decorate a wall, they will take a lot of staff time, with very little return. In many cities, there are commercial dealers for this purpose. If advertisers wish to use stills for purposes unrelated to the film which they illustrate, the archive must consider whether they should allocate time for a service having nothing to do with the main purpose of a film archive. There are professional picture agencies for this service. The most important function to be filled by selling copies of stills, in most film archives, is to make available illustrations for serious publications about the cinema.

3.1.5. *Storage and preservation*

A method of storing stills should be chosen which will avoid unnecessary handling of original prints and negatives and which will prevent the folding or bending of the photographs. Stacking prints in flat piles, for example, may prevent bending, but will make it impossible to locate the wanted still without handling all the others. Stacked vertically, stills fall against each other, and their accumulated weight will cause bending. A better system, and not necessarily a costly one, is suspension: only one or a few photographs are stored in a file or envelope, and these are suspended from a rigid frame fitted into the filing drawer or on a shelf. Containers must always be larger than the photographs stored in them, to avoid wear on the edges. As in the film vaults, negatives and positives should be stored in separate locations. Not enough is yet known to make final recommendations for the best preservation of photographs. Ideally, master duplicate negatives should be made as soon as the still enters the collection. This will probably be too costly for large collections, but at the very least the archive should protect the rarest and most valuable stills in this way. A second duplicate negative can be made to be used for positive copies, reserving the master negative for protection. As for the preservation of the originals and master negatives, consideration should be given to the material of the containers in which they are stored, in order that it does not

contribute to the deterioration of the photographic image. For example, the glassine envelopes commonly used for storing negatives are now thought by some to be a poor choice, but insufficient study has yet been made of the proposed substitutes to make a firm recommendation. A preliminary list of materials considered safe and unsafe for containing photographs is provided by the East Street Gallery's pamphlet (16), which also gives advice about proper processing, washing of chemicals, etc. and contains a useful bibliography. Temperature and humidity controls are the same recommended for other documentation materials (2.1.), and light should be avoided.

3.2. *Posters*

Film posters occupy a unique position in the documentation department: some of them will be collected as works of graphic art, as well as for their value as documents. Posters advertise films, events, actors, and other subjects. They may be acquired from production and distribution companies, from companies specializing in film advertising, from festivals, dealers, booksellers, auctions, private collectors, and by exchange with other archives. Extra copies may be reserved for exhibition purposes and exchanged with other archives.

3.2.1. *Cataloguing*

The cataloguing of posters presents some special problems, because the collection needs to be accessible in several ways, according to the interest of the poster. One solution is to make a central registry by the number assigned to the poster (3.2.3.), with a variety of indexes. The main entry card should make a separation between the information about the film or event being advertised, and the information about the poster itself. Most posters to be catalogued will be those advertising a specific film, which has to be identified. The FIAF periodical indexing project (2.4.5.) provides a standard format which may be found useful here: the original film

title is followed in parentheses by the abbreviation for country of origin, the name of the director, and the year of first public showing.

The information about the poster should include the name of the designer, the printer, the date and place of manufacture, and a description of the poster. If possible, a small photograph or other reproduction of the poster (microfiche, transparency, slide) should be used for the description, together with a record of the size or any other factors not actually shown by the photograph. This serves two important functions: 1) it avoids unnecessary handling of the original posters by the users, and 2) it saves the labor of detailed written descriptions.

3.2.2. Indexing

The minimum number of indexes needed are 1) by designer; 2) by original film title (with cross-references for titles appearing on the poster or other release titles); 3) by subject, such as events, personalities, topics, etc. Additional indexes might be organized by country, time period of manufacture of the poster, by style, etc.

3.2.3. Arrangement

Film posters come in a wide variety of sizes, take up a lot of space, and are too fragile for constant handling. Their arrangement is usually dictated by factors of size, value, condition, time period, etc., rather than by consideration of subject, title or designer. It will be necessary to assign a location number to each poster, which will be entered in the card catalogue. The Nederlands Filmmuseum has worked out a useful numbering system which is able to indicate the time period, the country of origin, the designer, and other details. In this archive, the number is used both for registering the poster and as a location number, resulting in material requiring similar treatment and storage conditions being brought together in the same storage area (e.g., posters of 1895-1919 tend to be in fragile condition and are stored together).

3.2.4. Storage

Posters are sometimes rolled, or stored flat in drawers, portfolios, or on shelves. All such methods endanger the condition of the poster, and are usually wasteful of space. If some posters have to be stored flat in drawers, they should be examined as little as possible, as to look at one of them means wear and possible damage to all posters in the same drawer. The system of hanging posters is the one recommended by most authorities. This involves the use of a hanger for each poster, to permit suspension from racks. The Nederlands Filmmuseum uses a method (illustrated in *Preservation of film posters* (77)) of hanging from open racks which is one of the most economical, but has the disadvantages of insufficient protection from dust and from damage to edges from traffic in the aisles. The Museum of Modern Art uses racks built into custom-made cabinets. An archive which intends to install facilities for poster storage might also investigate the various types of architects' plan files using the suspension principles. Such files should be of a type to permit pulling out one poster without disturbing the others, and without friction on the edges of the poster.

Temperature and humidity conditions (2.1.) should remain constant, and direct sunlight should be avoided.

3.2.5. Preservation

Posters received in good condition, without tears and permanent folds, will require no immediate treatment except proper storage conditions. However, some posters will be received in worn and damaged condition and must be restored. When the poster to be restored is extremely rare, valuable or considered as a work of art, the task is for the professional paper conservator. It is better to do nothing than to do something which cannot be undone. Treatments requiring the use of chemicals can be dangerous for the user and for the archive as well as the materials being treated, in the hands of amateurs. All paper documents can be affected by the acidity of the paper, by biological factors, by temperature, humidity, light, and

pollution, as well as by excessive handling.

1) Reinforcing by backing. The minimum protection to be given posters is to reinforce them by backing the edges, together with any torn places, or the entire poster, on the reverse side. Traditional backing materials, such as linen, have been found to be too supple, leading to cracking of the paper surface when the poster is folded and rolled. The recommendations of the Nederlands Filmmuseum, in the otherwise useful *Preservation of film posters* (77), concerning the use of self-adhesive masking tape to reinforce edges, must be disregarded. The memorandum of November 1, 1971 from the Nederlands Filmmuseum corrects the original recommendations and discusses alternate backing materials. At the moment, thin Japanese paper applied with cellulose glue or flour paste is preferred, but for the most valuable posters in the collection, this is a decision for experts.

2) Lamination. In the Norwegian Film Institute, posters are laminated between two sheets of plastic, pressed together in a process which eliminates all air. This protects the poster from dampness, drying out, and damage from handling. The plastic material used in Oslo is 8 mm thick, and the weight of one laminated poster of ordinary size amounts to about 400 gr. Plastic that is too shiny should be avoided. Unique and valuable posters should not be permanently sealed, however, because the plastic may become scratched or discolored in time. Lamination might be a practical step for duplicate copies which will be frequently handled. Sealing the documents between two sheets of cellulose acetate fails to inactivate the impurities causing deterioration, and the film does not by itself add sufficient strength. Lamination with highly stable acetate film and a strong fiber tissue gives assurance for moderate use over a long period of time. The Museum of Modern Art in New York uses mylar for some of its posters, but does not seal it: a mylar envelope may permit air to circulate and allows the poster to be withdrawn when necessary.

3) Deacidification of paper. Most papers manufactured since the beginning of cinema are more acid than is compatible with good longevity. In general, failures such as cracks and tears do not

ordinarily occur from use until the paper reaches the very weakened condition that is nearly always due to acidity. It may be advantageous to deacidify valuable documents before they reach a weakened condition. The process is described in *The Barrow method of restoring deteriorated documents* (3). However, it must be done by the chemist in his laboratory, and not in the documentation department, not only to protect the material being treated, but to protect the archive staff and building from the dangers of fire. Meanwhile, the documentation department can eliminate some danger of damage by storing all valuable paper materials in acid-free containers.

4) Disinfecting. To avoid damage by bacteria, mould or insects, both paper and location may need to be disinfected. Whether this process is necessary may depend on the condition of material received and the climatic conditions of the locality. Again, the process should be left to the professional.

4.1. Access to collections

One of the most important goals of the film archive is to provide information and promote research. Therefore, the collections of the documentation department should be as open to the public as is practical. The limitations will be determined by what is available to the general public in other local libraries, by the need to protect rare, unique and restricted materials, and by the size of the staff and budget. If there is a restricted lending policy, the demand for good study facilities on the premises is more urgent. The hours during which the department is open should be convenient for users, including if possible some evening and weekend hours.

Lending may be restricted to duplicate materials, and if a lending policy is to be adopted, the budget should allow for the purchase of duplicates, at least of the most requested books and periodicals, as well as duplicates for use in the reading room. Loan conditions should be established, and should be available in printed form, giving such information as to how the collections are organized, who is entitled to borrow material, how much material

can be borrowed, the lending period, how overdue loans are handled, and the library hours. Readers who live at a considerable distance might be serviced by postal loans. Inter-library loans should be granted whenever possible.

4.1.1. The lending record

In order to be able to locate material on loan, it is necessary to keep a lending record. There are several systems for charging books. One is the Newark system, which involves a borrower's card, a book card, a book pocket, and a date due slip. However, many small libraries prefer a more simple method, such as a lending form in several copies, which are filled in for each item to be lent either by the borrower or by the library staff. This form can be used for recording books and other material. The lending form should contain at a minimum the following information: author and title of publication (in the case of periodicals, the title, volume, issue number and year), the name and address of the borrower, and issue date or due date. One copy may accompany the book, one will remain in the loan record file, and one may be used as an overdue notice, if necessary.

4.2. Dissemination of information and special services

To enable users to get maximum benefit from the department's resources, the staff must be prepared to spend time searching for the information they need. Some archives offer a telephone information service. To avoid being overwhelmed by casual callers, the purpose of an inquiry should be established before embarking on any but the briefest of searches, and a distinction might be made between those who could visit the department to do their own research and those who live at too great a distance.

There are many kinds of information that can be made available by the staff without any specific request. Every documentation department should strive to achieve at least some of the following tasks:

4.2.1. Filmographies of the national production

This is an obligation for every film archive if the work is not done by other institutions or individuals. National filmographies should be published, but if this is not possible for economic reasons, at the very least a record should be kept in the archive. The FIAF Documentation and Cataloguing Commissions are making plans for the exchange of filmographic information between countries, with the long-range goal of establishing an international filmography. When the archive is deciding what information to include in the national filmography, it should consult the lists published in the *FIAF Film Cataloguing*, in order to meet international standards.

4.2.2. Catalogue of film credits

In addition to the above, many archives maintain a card catalogue listing the credits of all films released in their country or all films on which the archive has collected some information. The cards may contain the original title of the film, the local release title, the year of first public showing, the name of the production company, the local theatrical distributor and nontheatrical distributor, names of the director and chief actors. Some archives record more detailed credits, synopses, presentation at festivals, awards, and references to periodical materials on specific films. Although this kind of catalogue is valuable in the daily work of the documentation department, the need for extensive information should be questioned. There exists dangers of duplicating the work of other archives which are recording their national production, and of establishing errors and inconsistencies. It is necessary to decide whether the input of work is justified by the extent to which the information is used. Usually, a listing of the main credits together with references to the filmographic periodicals which contain extensive and reliable credits on the film will be sufficient. An up-to-date, accessible and well-organized clipping file (2.7.) can serve some of the purposes of this catalogue, when there is insufficient staff to maintain both.

4.2.3. *Catalogues of archive holdings*

The publication of catalogues of books, periodicals, scripts, posters, and all kinds of documentation materials held by the department constitute a great help for other archives, libraries and individual readers in locating materials. The FIAF Documentation Commission has published the FIAF Directory of Film and Television Documentation Sources (73) which is available from the FIAF Secretariat.

4.2.4. *Accession lists*

Accession lists for new acquisitions should be issued at regular intervals, to make known the availability of new material.

4.2.5. *Bibliographies*

These may be prepared on particular topics, either at the request of a researcher, or in connection with archive showings, series of lectures, etc. They may be published, or made available on request by the use of photocopies.

4.2.6. *Displays*

Displays may be arranged in the library, the archive's film theatre, or wherever they may be seen by visitors to the archive, consisting of all kinds of documentation materials from books and book jackets to stills and posters. Such exhibitions are designed to inform the viewer on specific topics or merely to serve to alert him to the availability of materials for study in the archive.

4.3. *Microfilming*

Microfilm serves the purpose of saving space in the archive and avoiding unnecessary handling of valuable or fragile originals. Microfilm also makes possible the acquisition of out-of-print materials.

4.3.1. *Microforms*

Factors of economy and flexibility determine the type of microform to be employed for each purpose. When microfilming is for the purpose of protecting seldom-used originals, simple roll microfilm may be the economic choice. However, the most convenient format for a frequently-used cuttings collection (2.7.6.) may be the standard-size micro-fiche (in use at The Department of Film of The Museum of Modern Art) or micro-jacket (in use at the National Film Archive in Ottawa and the British Film Institute). Micro-fiches and micro-jackets may be filed in the same manner as a card index.

4.3.2. *Equipment*

Archives are advised to investigate locally the possibility of doing their own microfilming on the premises, as opposed to paying a service to do it for them. In addition to the filming equipment, several viewers will be needed, and one of them should be a reader-printer, making possible blow-ups from the microfilm copy to the size of the original. The National Microfilm Association in the United States publishes a frequently revised equipment guide (2).

4.3.3. *Copyright*

If it is possible to obtain the permission of the copyright owners, the expenses of microfilming documentation materials might be offset by selling copies to other archives or documentation centers. However, when a miscellaneous collection, such as press cuttings, is in question, it should be remembered that many copyright owners may be involved, and it may be impractical to obtain the necessary clearances.

4.4. *Computer-based information systems*

The future of film documentation work will certainly involve to

some degree the use of the computer. Computer-based information systems will make possible a much wider dissemination of information and will save a lot of manual labor. Before they can be used, however, it will be necessary to achieve a high degree of standardization and discipline in the body of film documentation information to be put in the data bank. The documentation department staff would do well to inform themselves about the problems and to consider ways to achieve this end.

The most important thing the documentation expert must learn is to ask the computer expert, at all planning stages, to see the practical results and not to accept the theoretical answers. This is done by running all kinds of tests on a small body of data.

5. LIST OF USEFUL SOURCES

5.1. Material of general interest

- (1) Ashworth, W., ed. Handbook of special librarianship and information work. 3d ed. London, Aslib, 1967. 624 p.
- (2) Ballou, H.W., ed. Guide to microreproduction equipment. 5th ed. Annapolis, National Microfilm Association, 1974. 793 p.
- (3) Barrow, W.J. The Barrow method of restoring deteriorated documents. Richmond, Barrow Restoration Shop, Inc., 1970. 20 p.
- (4) Collection of materials on the preservation of library resources, documents and books. Jerusalem, Israel Program for Scientific Translation, 1965. 383 p. (translated from Russian).
- (5) Hawken, W.R. Copying methods manual. Chicago, American Library Association, 1966. 376 p. (Library Technology Program Publication, 11).
- (6) Henley, J.P. Computer-based library and information systems. London, Macdonald, 1970. 84 p.
- (7) Horton, C. Cleaning and preserving bindings and related

materials. 2nd rev. ed. Chicago, American Library Association, 1969. 87 p.

- (8) Manual for small special libraries. Wellington, New Zealand Library Association, 1970. 109 p.
- (9) Mukherjee, A.K. Fundamentals of special librarianship and documentation. Calcutta, IASLIC, 1969. 260 p.
- (10) Nanney, T.G. Using microfilm effectively: a case-history handbook. New York, Geyer-McAllister Publishing, 1968. 121 p.
- (11) Reichmann, F. & J.M. Tharpe. Bibliographic control of microforms. Westpoint, Connecticut, Greenwood Press, 1972. 256 p.
- (12) Silva, M. Special libraries. London, Andre Deutsch, 1970. 96 p.
- (13) Special libraries. 1910-. New York, Special Libraries Association.
- (14) Steele, R. The cataloging and classification of cinema literature. Metuchen, N.J., Scarecrow Press, 1967. 133 p.
- (15) Steele, R. The library organization of printed materials having to do with the cinema. In The journal of the society of cinematologists, v.3, 1963, p. 45-71.
- (16) Wilhelm, H.G. Preservation of contemporary photographic materials. East Street Gallery, Box 68, Grinnell, Iowa, 1976.

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- (18) Bibliography: FIAF members publications. 1966-. Ottawa, The Canadian Film Archives.
- (19) Bukalski, P.J. Film research. A critical bibliography with annotations and essay. Boston, G.K. Hall, 1972. 215 p.

- (20) Dymont, A.R. The literature of the film. A bibliographical guide to the film as art and entertainment, 1936-1970. London, White Lion, 1975. 398 p. (Annotated in English).
- (21) The film index. A bibliography. New York, The Museum of Modern Art Film Library & H.W. Wilson, 1941. v.1: The film as art. (Reprint by Arno Press in 1966). (Annotated in English).
- (22) Hartnoll, G. Bibliography. In The international encyclopedia of film. London, Michael Joseph, 1972. p. 514-541.
- (23) MacCann, R.D. & E.S. Perry. The new film index. A bibliography of magazine articles in English, 1930-1970. New York, Dutton, 1975. 522 p. (Annotated in English)
- (24) Manz, H.P., ed. Internationale Filmbibliographie 1952-1962. Zürich, Hans Rohr, 1963. 262 p.
- (25) Mitry, J. Bibliographie internationale du cinéma et de la télévision. v.1- . Paris, IDHEC, 1966- .
- (26) Mostra internazionale de libro e del periodico cinematografico, televisivo e fotografico: catalogo. 1955- . Venezia, Edizioni Mostra Cinema. (Annotated in Italian).
- (27) Rehauer, G. Cinema booklist. Metuchen, N.J., Scarecrow Press, 1972. 473 p. + Cinema booklist. Supplement one. Metuchen, N.J., Scarecrow Press, 1974. 405 p. (Annotated in English).
- (28) Reilly, A. Current film periodicals in English. rev. ed. New York, Educational Film Library Association, 1972. 25 p. (Annotated in English).
- (29) Répertoire mondial des périodiques cinématographiques. 2. éd. Bruxelles, La Cinémathèque de Belgique, 1960. (Annotated in French).
- (30) Vincent, C., ed. Bibliografia generale del cinema. Roma, Edizioni dell'Ateneo, 1953. 253 p.

b) National bibliographies

- (31) Bibliografia polskich wydawnictw filmowych 1945-1972., Warszawa, Filmoteka Polska, 1974. 169 p.

- (32) Bibliografie. In Filmo-bibliographischer Jahresbericht. 1965- . Berlin, Henschelverlag.
- (33) Delcol, G. Essai de bibliographie belge du cinéma. 1896-1966. Bruxelles, Cinémathèque Royale de Belgique, 1968. 3v.
- (34) Engberg, M. Dansk filmlitteratur. København, Det danske filmmuseum, 1964. 37 p. (Annotated in Danish).
- (35) Kniga o kino (1917-1960). Annotirovannaja bibliografija. Moskva, Izdatel'stvo Vostočnoj Literaturny, 1962. 180 p.
- (36) Kristensen, A.G. Filmlitteraturen i Danmark 1964-1973. København, Danmarks Biblioteksskole, 1975. 184 p.
- (37) Pelayo, J. Bibliografia portuguesa de cinema. Lisboa, Divulgação, 1966. 101 p.
- (38) Slijepčević, B. Jugoslovenski film u inostranim filmskim časopisima. Bibliografija 1947-1966. Beograd, Institut za film, 1968. 244 p.
- (39) Traub, H. & H.W. Lavies. Das deutsche Filmschrifttum. Eine Bibliographie der Bücher und Zeitschriften über das Filmwesen. Leipzig, Karl W. Hiersemann, 1940. 247 p.
- (40) Voss, T. Norsk filmbibliografi. Fortegnelse over norsk filmlitteratur 1911-1974. 2nd rev. ed. Oslo, Norsk Filminstitut, 1975. 33 p.

c) Subject bibliographies

- (41) Kula, S. Bibliography of film librarianship. London, The Library Association, 1967. 68 p. (Annotated in English)
- (42) McCarty, C. Published screenplays. A checklist. Kent State University Press, 1971. 127 p.
- (43) Samples, G. The drama scholars' index to plays and film-scripts. A guide to plays and filmscripts in selected anthologies, series and periodicals. Metuchen, N.J., Scarecrow Press, 1974. 448 p.
- (44) Turconi, D & C. Bassotto, ed. Economia diritto sociologia del film. Venezia, Edizioni Mostra Cinema, 1969. 205 p. (Annotated in Italian).

- (45) Turconi, D. & C. Bassotto, ed. *Il film e la gioventù*. Venezia, Edizioni Mostra Cinema, 1970. 293 p. (Annotated in Italian).
- (46) Turconi, D. & C. Bassotto, ed. *Il film e la sua storia*. Bologna, Cappelli, 1964. 255 p. (Annotated in Italian).
- (47) Turconi, D. & C. Bassotto, ed. *Il film e le sue teoriche*. Venezia, Edizioni Mostra Cinema, 1965. 264 p. (Annotated in Italian).
- (48) Turconi, D. & C. Bassotto, ed. *Soggetti e sceneggiature*. Venezia, Edizioni Mostra Cinema, 1967. 493 p. (Annotated in Italian).
- (49) Turconi, D. & C. Bassotto, ed. *Le vite e i film*. (Biografie e autobiografie della gente del cinema). Venezia, Edizioni Mostra Cinema, 1966. 393 p. (Annotated in Italian).
- (50) Voiculescu, E. *Repertoriu mondial al filmografiilor nationale/ Répertoire mondial des filmographies nationales*. Bucuresti, Arhiva Natională de Filme, 1970. 75 p.

d) *Bibliographies of periodical & newspaper articles*

- (51) Batty, L. *Retrospective index to film periodicals 1930-1971*. New York, Bowker, 1975. 425 p.
- (52) Bowles, S.E. *Index to critical film reviews in British and American film periodicals, and index to critical reviews of books*, in three volumes (volumes II and III combined). New York, Burt Franklin, 1974-1975. v.I, 345 p., v.II-III, 782 p.
- (53) *Cinematografia in presa, 1962-71*. Bucuresti, Arhiva Natională de Filme. (Annotated in Rumanian).
- (54) *Film literature index, 1973-*, Albany, N.Y., Filmindex, Inc., 1975-
- (55) Gerlach, J.C. & L. Gerlach. *The critical index, a bibliography of articles on film in English, 1946-1973, arranged by names and topics*. New York, Teachers College Press, Columbia University, 1974. 726 p. (Annotated in English).
- (56) *International index to film periodicals, 1972-*. New York, Bowker (1972 and 1973). London, St. James Press (1974-

1977). Brussels, FIAF Secretariat (1978-). Sponsored by FIAF. (Annotated in English).

- (57) Salem, J.M. *The screenplay from The Jazz Singer to Dr. Strangelove*. Metuchen, N.J., Scarecrow Press, 1971. 2v. Part IV of A guide to critical reviews.
- (58) Schuster, M. *Motion picture directors. A bibliography of magazine and periodical articles, 1900-1972*. Metuchen, N.J., Scarecrow Press, 1973. 418 p.
- (59) Schuster, M. *Motion picture performers. A bibliography of magazine and periodical articles, 1900-1969*. Metuchen, N.J., Scarecrow Press, 1971. 702 p.

5.3. Catalogues of library holdings

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- (61) *Bibliotek-katalog. Fortegnelse over litteratur i Norsk Filminstituttets bibliotek*. Oslo, Norsk Filminstitutt, 1970. 110 p. + suppl.
- (62) *Bøger om film. Fortegnelse over bøgerne i Det danske Filmmuseums bibliotek*. København, Det danske filmmuseum, 1961. 189 p.
- (63) *Catalogo della biblioteca. v.1: Cinema e TV i Roma*, Centro Sperimentale di Cinematografia, 1973. 422 p.
- (64) *Catalogue collectif des livres et périodiques publiés avant 1914 en possession des cinémathèques membres de la Fédération Internationale des Archives du Film*. Bruxelles, Cinéma-thèque Royale de Belgique, 1967. 89 p.
- (65) *Catalogue of the Book Library of the British Film Institute*. Boston, G.K. Hall, 1975. 3v.
- (66) *Motion pictures: a catalog of books, periodicals, screenplays, television scripts and production stills*. Theater Arts Library, University of California, Los Angeles. [2nd ed.], Boston, G.K. Hall, 1976. 775 p.
- (67) *Moulinier, P. Catalogue des périodiques français et étrangers consacrés au cinéma et conservés au département des périodi-*

ques de la Bibliothèque Nationale. Paris, IDHEC, 1963. 167 p.

- (68) Nye bøger om film/New books on film 1-12. Ed. by Karen Jones. København, Det danske filmmuseum, 1974. 186 p. (Continued in Nye bøger om film/New books on film 13- . . . København Det danske filmmuseum, 1975- .).
- (69) Periodical holdings 1974. Ed. by Gillian Barrett. London, British Film Institute, 1974. 80 p.
- (70) Tidskrifter i Filmhuset. Stockholm, Svenska Filminstitutet, 1970. 81 p.
- (71) Wheaton, C.D. & R.B. Jewell. Primary cinema resources: an index to screenplays, interviews and special collections at the University of Southern California. Boston, G.K. Hall, 1975. 312 p.

5.4. FIAF directories, guidelines & recommendations

- (72) Bowser, E. Guidelines for describing unpublished script materials. New York, The Museum of Modern Art, 1973. 4 p.
- (73) FIAF directory of film and television documentation sources. Ed. by B. Davies & J. Luijckx. Amsterdam, Nederlands Filmmuseum for FIAF, 1976. 70 p.
- (74) Jones, K. & M. Snapes. Guidelines for filing. København, Det danske filmmuseum, 1971. 37 p. (also in French: Directives pour le classement).
- (75) Jones, K. & M. Snapes. Guidelines for indexing. København, Det danske filmmuseum, 1971. 43 p. (also in French: Directives pour l'indexation).
- (76) Jones, K. & M. Snapes. List of subject headings. København, Det danske filmmuseum, 1971. 59 p. (also in French: Répertoire des vedettes-matières).
- (77) Preservation of film posters. A method of preserving and storing of film posters recommended by the Nederlands Filmmuseum. FIAF, 1967. 16 p. (except p.4, masking tape, p.10 mipofoli).

- (78) Moulds, M. FIAF classification for literature on film and television. ASLIB, 1980.
- (79) Jones, K. Summer School Papers, København, Det danske filmmuseum/FIAF, 1977. 61 p. (e.g., bibliographies, lists of filmographies, classification schemes, resources for film documentation departments).

Chapter VI

Copyright

*By John Kuiper, Chairman of the
FIAF Legal and Copyright Commission*

1. WHAT IS COPYRIGHT?

A copyright is a form of legal protection given by the governments of various nations to the authors of literary, dramatic, musical, artistic, and other intellectual works. The owner of a copyright is granted certain exclusive rights in his work such as:

- the right to print, reprint and copy the work
- the right to sell or distribute copies of the work
- the right to transform or revise the work by means of dramatization, translation, music arrangement, or the like
- the right to perform and record the work in various media.

1.1 Limited rights

The rights granted by the copyright laws of various countries are not unlimited and their scope varies from country to country. Two examples illustrate this limitation of rights: 1) in the United

States, unless certain steps are taken 27 years after a film has been given a copyright, all protection for the rights of this film ceases after 28 years. An additional «term» of 28 years, however, can be granted. Under a new revision of the U.S. law that became effective in January 1978, the length of the additional term has been expanded to 47 years and films created in 1977 and thereafter will have a term of 75 years from publication or 100 years from creation, whichever is shorter. (2) The performance right for musical compositions in the United States is limited to public performances for profit, and until 1972, the recording of sound was not subject to copyright at all.

1.2. International agreements

By agreement between national governments in the form of international conventions, the copyright protection granted by one nation's laws can be partially or wholly extended to countries beyond the copyright owner's own country. The major international copyright conventions are the Berne Convention (1886), the Pan-American Copyright Conventions, and the Universal Copyright Convention (1952). In addition to the multilateral copyright conventions mentioned above, there are some bilateral treaties or similar arrangements governing the copyright relations of two countries between themselves. Some countries also have laws granting protection to foreign works under certain conditions without regard to any international conventions or treaties. In all of these cases the extent of protection and the requirements for securing copyright vary from country to country.

2. FILM ARCHIVES AND COPYRIGHT

Film and television producers, scholars and teachers, and others wishing to use and copy old films for new productions naturally turn to film archives where such film is stored and preserved. It is possible, in principle, for film archives to assist those who wish to use their films for new productions in two ways:

1) by supplying information, and 2) by supplying when appropriate and permissible, a copy or copies of the required film.

2.1. Information for users

The supply of information (for example, about the films held by an archive, of similar or related films held elsewhere, the details of production, distribution, copyright ownership, etc.) is a very valuable function of a film archive and its importance should not be overlooked. There are usually no legal or administrative obstacles to the supplying of such information; the chief limitation being the information resources of the archive concerned. Some film archives are able to maintain good cataloguing and information services; others are not.

2.2 Restriction on use

An archive is not usually free to supply film copies for new productions because in many cases it does not control the copyright of the films in its collection. For any use to be made of its films outside the archive, first it must have received the written permission of the copyright owner or owners, or of their legal representatives or agents. In some cases an archive will want to get the advice of its own lawyers before it releases a film to a user.

2.3. Responsibilities of users

It is the responsibility of the producer, scholar, or teacher who wishes to use the archive's films off its premises to negotiate directly with the copyright owners, and to arrange for the necessary letter of authorization to be sent to the archive. In general, most archives insist that this letter be addressed directly to the archive and that it be kept by the archive in its files.

2.4. Responsibilities of archives

It is the responsibility of the archive to assure itself by inquiry, investigation or proofs, that the letter of authorization and the copyright claims on which it is based are legally valid. These formalities are unavoidable although they are at times the cause of certain tensions between the archives and their users. Many times a film archive, a non-commercial organization, stands between two commercial interests, usually the producer who wants to use its film, and the original producer, writer, creator, or depositor of this film. In such a situation an archive has no choice; however much it may desire to help the new producer, its responsibility to the original depositor or copyright owner is paramount. All other considerations apart, if an archive does not observe this responsibility strictly, it will alienate its depositors and donors, and so endanger its own existence as an archive. To protect its status and the status of its film collection, a film archive must reserve the right to refuse to supply film if it judges that to do so would be against its own interests. Every archive should establish policy guidelines for the granting of access to films in its collection designed not only to protect its donors but also to protect its unique films from damage and destruction.

2.5. Legal papers and instruments

Archives should consult legal opinion and consider carefully the drafting of standard deposit agreements which make clear the rights of owners and/or donors and the rights of the archive to preserve and use the works in its collection. Young archives should gather information about the deposit agreements of the older, more experienced archives to help in drafting such deposit agreements.

2.6. Costs to users

Whenever an archive is able to supply film for use in a new film or television production, it will normally require all its film copying

costs to be met. In addition, it may charge a service fee, on the principle that commercial users dependent on the services of film archives ought to contribute to the costs of their maintenance. This fee may be equivalent to the charge made by a commercial production library in order to avoid the charge of unfair competition against commercial libraries. Often, however, whenever the new producer is himself a non-commercial user of the film (i.e., a scholar, teacher, school or sister non-commercial institution), the fee involved is extremely low and is tailored to the ability of the user to pay it.

3. DETERMINATION OF OWNERSHIP

Just because a film is old, it cannot be assumed that copyright in it has lapsed. In England, for example, film copyright under the 1956 Copyright Act lasts 50 years; under the previous Copyright Act of 1911 several authors could claim copyright, and copyright could be exercised until 50 years after the death of the last surviving author, so that a film made in England in 1896 could still be copyrighted today. In the United States, a film which was never formally registered for copyright and which was never published or sold outright, could have an indefinite form of protection (i.e., like manuscripts), under Common Law rights granted by each state of the U.S. Consequently, an early T.A. Edison film which was never released or sold is still protected and the rights belong to the Edison estate.

3.1. Steps to take

To determine the copyright status and ownership of a particular film, one must know:

- 1) the country and date of its production and first publication;
- 2) the contractual history of the film, in order to establish the nature and ownership of the rights involved or created by the original production agreements, any subsequent assignments, leases or

other agreements resulting in a change of ownership or control of the rights involved;

- 3) the Copyright laws or other laws applicable to the film (i.e., on a *national* level, the copyright law of the country in which it was originally made or published and the country or countries in which the film is to be copied or shown; on an *international* level, the international copyright conventions to which such countries adhere and any bilateral treaties which may apply.)
- 4) what to look for on a film copy: For determining if a given film is copyrighted, the most important thing to look for on the copy is the notice of copyright. Example: "© John Doe 1971" or "copyrighted by John Doe 1971." It is usually placed on the title frame of a film or as near to it as possible.

3.2. Records of copyright

Some countries, notably the United States, maintain a formal record of copyright registrations, renewals, and assignments. When records such as these exist in a country of origin, a search of these catalogues or records should be made. In the U.S. anyone can visit the Copyright Office in Washington to make this search himself or he can have the Copyright Office make the search for him.

4. LEGAL ADVICE

Copyright laws are complicated and vary considerably from country to country, not only in detail, but in such basic principles as length of copyright, authorship (e.g., Anglo-American law places authorship in the producer, whereas Continental law places more emphasis on creative authors, such as the director, script-writer, composer, etc.), *droit moral*, and formal registration. Every archive should avail itself of the advice of copyright experts in its own country as well as employ a legal counsel to help make appropriate decisions about the access and use of its film collection.

5. FIAF COPYRIGHT AND LEGAL COMMISSION

The Copyright and Legal Commission of FIAF is at the beginning of its work and cannot hope to produce a guide to all the copyright laws of the world, or even of the main film producing countries. It will, however, advise FIAF members of the basic principles of film copyright, and of the main differences between the copyright laws of different countries; it also encourages each FIAF member archive to act as a center for copyright information obtainable in its own country. In these ways it hopes to assist all FIAF members and to be of service to film and television producers within the limits of the moral and legal responsibilities which they owe to their donors and depositors.

Chapter VII

The diffusion of film culture: access to the collection

By Eileen Bowser, Museum of Modern Art, New York

7. THE DIFFUSION OF FILM CULTURE: ACCESS TO THE COLLECTION

7.1. Introduction

Moving pictures and related material are collected and preserved in order that they may be viewed. Indeed, many of the older film archives originally came into existence out of a desire to show films, and their founders only gradually came to understand the necessity of preserving and cataloguing their collections. Each archive should decide the extent and the method of its contribution to the diffusion of film culture according to the needs of the country, the resources of the archive, and what is in the best interests of acquisition and preservation. In some cases, it is possible to delegate some of the tasks of the diffusion of film culture to other institutions, working in collaboration with the archive. However it deals with this mission, the film archive will often have to struggle to accomplish its basic tasks between two pressures: the demands for access to

films in the archive, and the need to protect the interests of the film owners and donors to the collection.

7.2. The methods of diffusion and access

7.2.1. Individual study

All film archives should try to make some provision for private study by scholars, especially to the degree that the archive holds films unobtainable elsewhere. While projection rooms are often used for this purpose, it is most desirable to provide flat-bed viewing tables (such as are recommended for the use of cataloguers) for the close analysis of films. Such tables have varying speeds, measuring devices, and permit repeated viewing of sections of films. They need not have all the complicated and expensive devices of editing tables. In the general run, the flat-bed viewing table is less damaging to the archive's films than any projection equipment with an intermittent movement, although abrupt stopping and starting even on the flat-bed viewing table may be damaging to films. Where there is a great demand for private study facilities, it may be found more economical to make 16mm or 8mm copies, or video cassettes, especially when the need for viewing is for reference and not for formal film study.

7.2.2. Projections

Most films archives institute regular showings on their own premises, which may be open to members or to the general public. Such projections should not attempt to duplicate commercial cinemas, but to show films which would not otherwise be seen and in contexts which help people to understand and appreciate them. It is recommended to hold discussions with the owners of commercial cinemas and the distributors to set up a system which will not be regarded as competitive. The non-commercial and cultural purposes of an archive projection program will best be understood by the kind of programming, which should be different from that provided by

the commercial cinemas. Some other ways that have been used by archives to clarify the special status of their projections include: (a) showings are open only to members, who pay an annual fee; (b) admission is charged to a film museum, where the films are only one of the several exhibits to be seen; (c) free admission. If those establishing an archival projection program should expect it to be self-supporting through memberships and admission fees, it will very often be found that only popular films which appeal to a large audience can be shown, and the archive will have difficulty in fulfilling its mission to show films of special interest to a limited audience, and may even find itself in a competitive position with commercial cinemas. Experiences have shown that it is better to consider the archival film projections as one of the archival tasks which must be subsidized.

The archival projection program may have two basic aims: (a) to provide carefully planned series of films to educate and inform, together with as much background information as possible concerning the films in the form of program notes, publications, lectures and symposia; (b) to make all the films in the archive's collection viewable, without discrimination, in order that the public may make their own discoveries and evaluations of film history. Most archives will try to find a way to fulfil both aims, and provide films for a variety of audiences. The film programs that are planned in depth may include retrospectives of film history, series devoted to the work of a filmmaker, a genre, a theme, a country's production, or a specific time period, and the work of new filmmakers who would not easily find commercial distributors and cinemas. In the larger archives, the film showings are usually planned by a section separate from the sections responsible for acquisition, preservation and cataloguing, for two reasons: a regular program of projections will consume all of the staff's time, due to the necessity of providing films to a fixed time schedule; and to avoid any conflict of interest and priorities in the basic archival work. In many archives, films are shown not only from the archive's own collections, but also are borrowed from other archives and from distributors.

When planning the archive's cinema, it is advisable to consult

experts and to investigate the facilities at other archives, before investing in expensive equipment and costly building programs. The archive shows all kinds of films from different periods of history, and must be able to project silent films at varying speeds and to provide musical accompaniment. The film archive should always strive for the best possible projection, and to show films as nearly as possible in the way they were originally intended to be shown. Special safety construction in the projection booth and equipment is necessary if the archive wants to show nitrate film copies. The sound equipment, the sight lines, the distance from projectors to screen, the type of screen and matting, all are important factors worth serious study, and beyond the scope of this basic manual to describe in detail. It should be sufficient to point out here that architects alone are generally not enough to design a good projection room, and that technical experts and engineers are also needed at the planning stage.

7.2.3 *Distribution*

Some archives provide film copies for study in classrooms, in schools and universities, and sometimes for film clubs. This can be a very important service to provide in countries with inadequate distribution systems, making films available to a wider audience than can attend the archive's own showings. However, it is of great importance to set up a completely separate department or organization for the purpose, since the needs of the program are quite different and the agreements to be made with film owners are on another basis than those made for the deposit of films for preservation purposes in the archive. It would be harmful to the archive work should the film owners confuse the two purposes of acquisition. Nevertheless, one of the FIAF archives, The Department of Film of The Museum of Modern Art in New York, successfully established a non-profit, educational distribution in its very beginnings in 1935, at a time when there was no system for seeing a film in the United States once it completed its commercial distribution. The Department's circulation program influenced the course of film study and

brought about a complete change in the distribution patterns of films for which there was no longer a commercial demand. This is the oldest archival circulation program still in existence today.

Users of a circulation collection must sign a contract which specifies the non-commercial and educational use of the films. Today, so many educational institutions own their own video equipment that it is wise to include a clause which forbids the films to be televised or otherwise transmitted within the institution showing them.

7.2.4 *Archival loans*

Films from the archive collections, when protected by preservation materials and when the permission of the rights owner is obtained, may be loaned to other educational institutions and archives, distributed in touring shows, or broadcast on television. The important consideration is that the written authorization of the rights owner must be obtained for all such activity. Extreme caution should be used to avoid the false impression that all films deposited in an archive will be shown freely elsewhere, to the detriment of the archive's acquisition program. The film archive must exercise care to maintain its non-commercial status at all times. In no case should a film archive's own copies be used for commercial cinemas or lent to television, even with the owner's authorization, because the resources of the archive may not be used for commercial purposes. Commercial organizations wanting films for television and theatrical release should be obliged to pay for making copies and should also contribute toward the preservation work of the archive.

7.2.5 *Use of the archive's printing materials*

It is advisable to set a policy at the outset concerning the use of the archive's printing materials by outside users, in order that preservation copies are not damaged or worn out. The archive should make an informed decision as to the number of times the preprint materials may be run through a printer for making release

prints without undue wear, and after the limit has been reached, the user should be compelled to pay for additional preprint materials. Similarly, no printing of corded-off excerpts from the preservation materials should be permitted; instead, whole reels should be printed, even when only a part will be used. Nor should the demand for access be allowed to interfere with the systematic progression of the archive's preservation program.

7.2.6. *Other methods*

Diffusion of film culture may also be accomplished through lectures, symposia, film courses, publications of the archive, and film historical research, either by the archive staff or by encouraging use of the archive by historians.

Chapter VIII

Practical work

By John Kuiper, Film Department — International Museum of Photography at George Eastman House

1. FILM HANDLING

Motion picture film is one of the most fragile of all artistic and communicative materials. It is subject to irreparable physical damage through the action of dust and dirt, improper humidity, temperature and moisture, chemical action, air pollutants, strong light rays, improper screening and/or projection, as well as the more recognizable causes of damage like rough handling, poor developing and processing, and improper storage. Many of these causes of damage and their remedies are treated in the chapters that follow and it is the function of this section only to warn the reader about their existence and to set guidelines for their recognition and prevention.

First of all, any time an actual motion picture film strip is handled in an archive, soft, white, clean gloves should be worn. These gloves usually are made of cotton and are easily cleaned or are so cheap that they are discarded after a significant amount of dirt or oil has accumulated on them.

The use of white cotton gloves prevents the deposit of oil from the hands on the film and serves to indicate how dirty the film being handled is. However, if a film has badly damaged perforations these may catch in the fabric of the gloves and cause more damage. Such damage is more readily inspected with the bare fingers. When wearing gloves is impractical for some reason, another method of minimizing damage in handling film is the attachment of generous leaders at the start (head) and end (tail) of each reel of film. Such leaders, however, should always be attached to aid in identification as well as to minimize the risks of danger.

Personnel handling film should be instructed not to smoke anywhere near the rooms where the film is handled, must be cautioned not to drop the film because of the dust it will pick up from the floor, and should be instructed not to pull the film tight from one end (i.e., cinching) because this will cause small scratches to appear in the lighter parts of the image. In general, all new film handling personnel should receive instruction from an experienced film handler on the causes of damage and how to avoid them in the archive where they work.

1.1 Film handling equipment

Film archives usually press into their service the standard makes of film handling equipment used by the film industry of the country in which they exist. In many cases this equipment is perfectly adequate, especially if it is well designed and constructed to be used for preprint materials (i.e., negatives and master positives). However, certain types of equipment are not suitable for archive work. These include rewinds and rewind tables that permit film to be wound too tightly or at too great a rate of speed (because of the danger of scratching and cinching), equipment in which the film is imperfectly wound (because of the danger of damaging the edges of the film), synchronizers and other synchronizing machines that may damage the perforations of a film, projectors and viewing machines of all kinds except those that use a continuous movement of the film past the picture "head" or film gate, film cleaning

machines that permit dust and dirt from a dirty film to build up on surfaces of the machine and to scratch succeeding films while they are being cleaned, and rewind tables that have sharp or rough projections that may scratch a film that momentarily "runs out" on to them.

Even the finest film handling machine can be misused and thus cause damage to a film. The most common causes of such damage are:

- 1) operating a machine too fast,
- 2) improper threading or loading of a machine,
- 3) failure to read the instructions on how to operate a machine or to get competent instruction in its operation, and
- 4) use of a dirty machine or failure to clean a machine after *each* use.

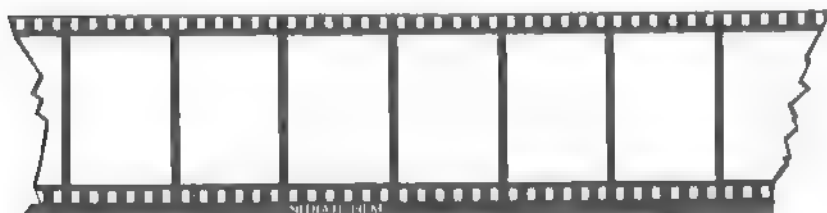
All machinery should receive regular preventative maintenance in order to keep it operating safely and efficiently. Regular schedules for this maintenance must be set up and rigidly adhered to by the technical personnel of the archive. Most machinery manufacturers will suggest the frequency of such preventative maintenance and often these schedules are included in the instruction booklets supplied when the machine is delivered. If no instruction and/or maintenance booklets can be located for a piece of equipment, the manufacturer should be written to request one. If the equipment has been discontinued, the technical personnel of the archive should prepare an instruction and maintenance manual to be kept with the machine.

Whenever a machine is used to handle film the operator must remain alert to clues and signs of damage to the film. These clues are both visual and auditory and sometimes a knowledgeable operator also uses his sense of touch to identify a source of damage. A machine that is operating correctly without damaging film creates a specific sound and any deviations from this sound may be an indication of damage to the film. Periodic visual inspections of a machine should be made while it is running a film to see if the film is being deformed, scratched, or torn. Touching the film as it emerges from the last sprocket or drive wheel can also provide an indication if the film is being damaged.

1.2 Nitrate handling

Because of its fragility and inflammability, nitrate base films always require special handling procedures. Perhaps the first step in handling nitrate film properly is to identify it as nitrate. There are several ways to do this and usually a combination of the following facts and procedures are used:

- 1) Nitrate film is almost always 35mm in width,
- 2) upon opening a can of nitrate film there is usually a strong chemical odor present (this odor may not be a sign of deterioration but the physical condition of the film should be carefully investigated),
- 3) signs of deterioration are sometimes present and consist of sticky film, sometimes a reel is fully stuck together, sometimes parts of a reel have deteriorated to a brown powder (be extra careful with this film because the powder is like gun cotton), glistening droplets on the edge of the film also indicate deterioration,
- 4) the word NITRATE is frequently printed on one or both edges of the film, outside the perforations, thus:



however the absence of such a NITRATE mark and even the presence of a SAFETY mark is no guarantee that the film is not nitrate,

- 5) certain manufacturers place a phosphorescent dye in the edge of acetate film and this can be activated by the use of proper illumination (this procedure is most useful for identifying rolls or reels of film that contain mixtures of nitrate and acetate film), sometimes a bar is printed parallel to the frame line between perforations,
- 6) a float test can be conducted to indicate if a small particle of film

punched from a roll is either nitrate or acetate. The test uses a liquid the specific gravity of which lies between that of nitrate and acetate film. The punched particle either floats to the surface or sinks to the bottom. The liquid used is usually tri-chloro-ethylene. In such a liquid nitrate particles sink and acetate particles float. This is the safest and most reliable way to identify nitrate film.

- 7) as a *last resort* a very small piece (i.e., no more than one frame or one inch in length) of the film to be identified can be removed from the roll to be identified and a "burning test" conducted in the following manner:
 - a) The piece of film is taken to a spot with adequate ventilation away from all other film and combustible materials.
 - b) The piece of film is placed on a flat non-inflammable surface and lighted with a long match or taper.
 - c) If the piece ignites easily and burns extremely rapidly, there is little doubt that it is nitrate. Do not inhale the fumes!
 - d) On the other hand, if the piece is hard to ignite, keeps going out after it is ignited, and burns slowly, it is probably acetate film. This test is not very reliable and potentially hazardous.

Fire is a real and extremely dangerous hazard whenever nitrate film is handled and proper precautions must be taken to minimize the possibilities that a fire will occur. Once a nitrate fire is ignited it *can not be extinguished!* Some technical sources indicate that deteriorated nitrate film will spontaneously ignite at temperatures from 105°F to 300°F.

First of all, every possible ignition source near the film must be eliminated. This includes obvious sources like open flames, cigarettes, electric heaters, machinery with spark-producing motors, or electric appliances that produce heat. Special care should be used when handling nitrate films on a viewing table because of the heat produced by the electric lamp used to illuminate the film. Secondly, less obvious sources of ignition should be considered. For example, excessively hot and dry temperatures and humidity conditions are to be avoided in work rooms where nitrate is handled because of the

dangers of static electricity producing a spark that might ignite the film. Similarly, metal film cans scraping against the film or another substance in transit might generate enough heat to ignite the film. Also, uncovered or improperly insulated electric equipment might cause enough heat to ignite the gases released from badly deteriorating film.

Any time nitrate film is placed on a machine for cleaning, printing, winding, or repairing, additional risks of fire are present. All such machines must be electrically well grounded to minimize the chances of sparks being produced.

Once ignition sources are eliminated during the handling of nitrate film, there is little likelihood of a fire. However, all archive personnel who handle nitrate must be instructed in the appropriate local procedures to follow in the case of a fire. Because a burning nitrate film *can not be extinguished*, the primary fire procedure for a nitrate fire is evacuation. Consequently, all fire exits must be properly and clearly marked and illuminated, fire doors must be installed and be checked periodically to be certain they do not stick and are not locked from the inside. All archive personnel working near nitrate film must be informed of the location and access of all fire doors. An emergency fire evacuation plan should be prepared and regular fire drills must be conducted to be certain that the plan is efficient and that all personnel understand what to do in case of fire.

Original nitrate positive prints in good, non-deteriorating condition may be safely projected under controlled conditions in an archive. However, these conditions are very stringent and include a fire-proof projection booth equipped with fire doors, proper ventilation and special fire control devices installed on the projectors and on the projector parts of the booth. There should also be a panic switch mounted outside the booth so that the projectionist can turn on the houselights after he has reached safety. Most nitrate prints are shrunk more than 1% and it may be necessary to have undersize or worn sprocket teeth placed on a projector to be used for projecting nitrate film.

Disposing of deteriorating, unwanted or surplus nitrate film is

becoming a problem. This is because it is difficult to transport it safely to a disposal site, it is against the law in many states to burn it because of the fumes and smoke created during its combustion, and because many land-fill burial disposal areas will not accept it. The disposal problem must be solved by each archive individually taking into account local and national fire regulations and waste disposal practices.

Shipping of nitrate film is also a difficult problem. Many countries prohibit the shipment of nitrate film over central highways and exclude the possibility of shipment in passenger aircraft. Common sense dictates that any shipment should take place in cool weather, or in airconditioned or refrigerated vehicles and in containers specially designed to minimize the risk of fire. The problem of shipping nitrate must also be solved by each archive individually in concert with local and national authorities, fire regulations, and shipping regulations.

2. TRANSPORTATION

In addition to the special precautions involved when an archive ships nitrate film, several general observations can be made about the transportation of motion pictures. The main dangers to film in transit are excessive heat and humidity, dirt, vibration or rough handling and sudden changes in temperature and humidity. Motion pictures must be adequately prepared and packed for shipment if damage or loss in transit is to be avoided.

The problems of excessive heat and humidity and sudden climatic changes can be solved only with specially airconditioned vehicles or by reducing the transit time to a minimum at an appropriate time of year. The dirt problem can be solved by shipping the films in air tight containers or by placing each roll in a sealed plastic or paper bag. However, nitrate film should *not* be tightly sealed to avoid the build-up of gases. The problem of vibration and rough handling is best solved by choosing a shipper with equipment and personnel to handle the film easily and by carefully rewinding

each film roll before shipment to make certain it is wound tightly and evenly and that the ends of the film are securely fixed (taped down) so that vibration or rough handling does not damage the edges of the film or outer parts of the film. Rolls of film should never be shipped without a plastic or other core in the center of each roll if the film is not mounted on a reel. Usually, all preprint materials (negatives, master positives, etc.) are shipped with each roll mounted on a core, placed in a plastic or paper bag and further protected by a metal can.

Many governments have special customs and other legal requirements for shipping films abroad. Archive personnel should become aware of the regulations for their country and should try to obtain from their government permission to import and export films in a duty-free status for cultural purposes.

3. HANDLING TELEVISION MATERIALS

An increasing amount of television materials are recorded on videotape which tends to be manufactured on an extremely thin support base. This means that the edges of video tape are easily damaged or wrinkled. Such recordings must be very carefully wound and should be handled only on video recorders or winding machines made for that purpose. Because of the thinness of video tape it is usually stored and shipped on reels. Video tape is also subject to accidental erasure or accidental electronic damage to the video picture. Because such picture damage is not visible to the naked eye, it is elusive and especially bothersome. The best way to avoid electronic damage is to use and store videotape away from any electrical or magnetic impulses and to periodically play back videotapes from the archive collection to see if the image is retaining its quality. The risk of electronic damage to magnetic tapes in shipment is particularly high when electrified railroads are used. In such a case only specially constructed and very expensive containers offer any real security.

4. FILM STORAGE

Immediately upon their arrival at any archive film and other archival materials should undergo a technical inspection, should be removed from reels and laboratory bags discarded, should be registered, and the technical data entered on card files. Any necessary corrective treatment should be applied, and then the films can be stored. The chapter in this manual on cataloguing contains information about registration, preliminary cataloguing, and the use of storage numbers. The chapter on preservation gives recommendations for the proper temperature and humidity to be maintained in storage areas as well as procedures for inspection of possible damage and shrinkage. It should be pointed out that good preservation planning dictates the separation of nitrate and acetate film storage areas and that whenever possible pre-print (i.e., negatives and master positives) and projection materials on the same title should also be stored separately.

The physical plant of a sophisticated film storage area can be quite complex with specially designed and constructed buildings, air conditioning and heating equipment, shipping areas and loading areas, large, insulated vaults of various sizes and environments, rooms to condition film before storage and to re-condition it before it is released from storage, fire prevention devices like sprinkler systems or Halon systems, and special security systems to warn personnel of fire, malfunction of air conditioning, or illegal or improper entry. The personnel to maintain and service such a complex film storage installation is large, skilled, and costly to maintain. Many small or young archives are not able to afford such a sophisticated operation. Consequently, most young archives press into service the coolest, driest, and safest space available than can be afforded. Such spaces include former underground shelters, unused ammunition storage depots, caves or unused mines and storage buildings constructed for another purpose but modified to make film storage acceptable. In choosing such locations, the hazards of fire and the risks to life of personnel should be weighed seriously. Most areas not originally constructed for film storage will

have to be remodeled to some extent to make them acceptable as storage areas. This remodeling usually includes air conditioning and humidity control (almost always needed), special security devices to monitor atmospheric conditions inside the vaults, and the installation of suitable shelving to hold film cans.

5. LABORATORY WORK

Much of the basic work of a film archive is organized around laboratory processes. This is so because the careful copying of deteriorating film is presently the only cost effective way to preserve and to restore it. A film to be preserved should be copied onto the same size and format film in which it was created (i.e., 35mm originals are copied onto 35mm film, 16mm originals are copied onto 16mm film, etc.). In some cases, large originals can be reduced in size for preservation purposes (i.e., 35mm originals printed by reduction to 16mm preservation copies). This results in a saving in the cost of raw film and processing and in a saving of storage space at the archive. But such a reduction often involves a great loss in image and sound quality and most archives refuse to use 16mm reductions as satisfactory preservation materials.

The main problems involved in preservation copying result from the shrinking, fading, damage, nitrate deterioration, dirt, and scratches in the original film. Occasionally non-standard format films must be copied (i.e., older or out-moded formats no longer in general use like 28mm and 9.5mm films). These create a preservation problem because printing machinery for them is often impossible to find and is difficult and expensive to design and manufacture. Because the preservation of non-standard format films presents special problems of equipment it is wise for archives without the equipment to copy them to ask FIAF for help in locating an archive which has already copied such films. The more experienced archive will be able to give valuable assistance and advice in any copying program that is contemplated.

Shrinkage is a common problem with nitrate film and acetate

film. The most serious effect shrinkage has on film is to make the perforations of the film closer together thus making the film impossible to print on standard machines without damaging the shrunk film and introducing unsteadiness of image into the new copy. To solve this problem, new motion picture printing machines either have to be rebuilt with smaller, sometimes interchangeable, parts or older and worn machines have to be modified in several ways to accept the shrunk film. Shrinkage can be measured by the use of calibrated machines that indicate the percentage of shrinkage or by comparison to a new, unshrunk film or to a ruler which has been marked with standard frame divisions corresponding to the frame lines of an unshrunk film.

Many shrunk nitrate films are also brittle and these films must be carefully handled, prepared, and printed. Brittle films are often severely damaged by only one printing step. Such films may have to be fed into printing machines by hand and the machine itself may have to be slowed down in order to allow each individual frame to position itself and to overcome the effects of "curl", "clock-spring" like deformations, buckle, and thick splices.

Fading of the image is another serious problem often presented by old film. In the case of black-and-white film, fading is often caused by poor initial processing. When this is the cause, sometimes the image can be restored chemically by bleaching and redeveloping. Fading can also be caused by deterioration of the nitrate base.

Physical damage such as torn sprocket holes and ripped edges, broken splices, and film tears can be repaired in several ways including the use of special optically clear polyester tape temporarily applied over the damaged sections. Sometimes such repairs are apparent in the final preservation copy but the results are often acceptable.

Minute particles of dust and dirt imbedded in the film produce another preservation problem. In some cases dirt and dust in the emulsion layer can be soaked and washed out by special processing equipment. Scratches produced by this imbedded dirt are also bothersome and can be eliminated by the soaking and washing

method, or if the scratches are on the base side of the film, by the use of a polishing machine. The use of printing machines that provide good contact and have diffuse illumination can also contribute to the prevention of the copying of fine scratches onto duplicates. All of these corrective measures are delicate and time-consuming and have their own risks.

The problems faced by an archival preservation laboratory are often too specialized to be solved successfully by a commercial, production-oriented laboratory. This is especially true of the nitrate to acetate printing phase of the copying process. Until recently, almost any commercial or film industry laboratory in the world could be counted upon to be able to print and to develop black-and-white film successfully and properly and to wash it free of any residual chemicals that might eventually cause the new image to fade. Unfortunately, the use of black-and-white film in the film industries of the world is declining rapidly and with this decline there has been an enormous drop in the availability and quality of black-and-white work. Consequently, many archives are finding it essential to establish a complete laboratory of their own in order to produce preservation copies of the quality necessary to meet archival standards. Each country and archive is different in this regard and no unilateral solution to the problem of quality copying can be prescribed. However each archive must develop or adopt criteria to evaluate the quality of the work produced by its own or another laboratory engaged in preservation copying and processing.

5.1 Test of quality

Every archive that copies films for preservation purposes must be able to conduct certain laboratory tests on completed acetate preservation film copies. The most important of these tests is for residual thiosulfate (hypo) which may be left in black-and-white film because it was insufficiently washed by the laboratory or washed with chemically impure water. There are several methods of conducting this test and every archive ought to consult the scientific and technical literature of its own country to determine which one to

use. When a film fails this test it is an indication that it must be thoroughly rewashed and although there is no exact rule for the duration of this rewashing, it is generally agreed, but not universally so, that rewashing can be conducted again and again until the film passes the test.

An archive must also be able to conduct standard photographic measurement tests of densitometry and sensitometry in order to check the photographic quality of the images produced by a film laboratory. A photographic engineer should be on the staff to devise and supervise the administration of these tests.

In addition to photographic quality, tests of image steadiness and sound quality are also necessary. Frequently these tests can be performed during a projection of a completed print of a preserved film and are usually conducted by the survey method in which knowledgeable technicians fill out an inspection report form or sheet after or during the screening of the films being tested.

5.2 Equipment

Archival laboratories have very special equipment needs because of the multiplicity and severity of the film problems they face. Consequently, good contact between archive personnel and the film industries of the country are essential so that the laboratory can get and give advice on how to meet these needs. In particular, an archival laboratory ought to try and save and store for future use "outdated" printing equipment in good mechanical condition because older films often can be most satisfactorily printed on older equipment.

6. MANAGEMENT OF FILM ARCHIVES

The management practices and decisions used in film archive work vary according to the goals of the archive, the size of the collection, the location of the archive, the amount and nature of the fiscal support provided, and the level of cinematic culture present in

the general population served by the archive. Some archives with enormous collections perform mainly technical, housekeeping, and preservation duties and are effectively managed very much like storage depots or warehouses. Others with much smaller collections are almost exclusively devoted to the diffusion of film culture and must be managed like exhibition theatres, while still others (to explore only three possibilities), are mostly devoted to scholarly research and should be managed like a research institute, university, or school. Although every archive develops a special organization peculiar to its own situation, there are certain principles of management that should be observed in all film archives.

First, the goals of each activity undertaken by an archive should be thought out, clearly defined, and articulated through written memoranda or policy statements. Secondly, the archive should try to maintain its policy-making and decision-making independence from other film organizations that naturally tend to use the archive's collections for purposes other than study and research. The statutes of FIAF encourage the legal independence of its members. Third, the archive must keep careful and accurate records of its receipt of film and of the rights it possesses in each film title in its collection so that it can make decisions about the use of the collections with confidence. Fourth, the preservation and restoration of an archive film collection is a task which cannot be carried out except by personnel properly instructed and experienced in this special field. Consequently, special attention by management must be given to employing qualified staff and to developing the talents and abilities of younger staff members through training activities. (The chapters on documentation and cataloguing contain more specific suggestions on the training and type of people needed in these fields.)

In addition to the problems that arise from its efforts to develop and explore cinematic culture for its users, three areas of archive work always appear to need management attention: physical plant, employee relations, and budget. An archive cannot exist without an adequate place to keep its films and the work caused by this requirement becomes increasingly time-consuming and costly as the archive grows and matures. The areas and buildings in which film is

stored are architecturally sophisticated and need constant attention and maintenance by trained individuals. The cost of this maintenance is often very high because, for example, airconditioning equipment must be replaced or repaired, films stored within the areas must be shifted at great expense of man-hours, and the amount of cleaning and maintenance necessary to achieve a satisfactory cleanliness level is more than for the usual warehouse. In addition, these storage areas are usually located away from urban centers which means that time and energy must be devoted to the transportation of films and personnel.

Employee relations include the planning of the duties of archive personnel, the supervision of their work, their training and professional standing, vacations, health, security benefits including insurance, retirement, savings, and any professional or social functions supported by archive funds or held on archive premises. When an archive is young and small the demands of personnel planning activities are small and can be fitted into the busy routines of staff without much difficulty. In larger archives with many workers, technicians, and professional film people, personnel matters need to be dealt with on a more professional, consistent, and organized basis. Consequently, the larger organizations usually hire managers with training in personnel relations to develop and administer a consistent and fair personnel policy that conforms to the laws and practices of the country in which the archive is located.

Budget planning always presents crucial problems in the management of any film archive and the yearly budget itself may be viewed as the ultimate expression of the priorities of an archive because it is at budget planning time that future goals and programs are discussed and decisions made. The preparation of a budget is also related to the independence and relative autonomy of the archive and its program because when an archive is part of another organization it is inevitable that it will be in competition for the services and funds provided to it by that organization.

Appendix

The collection of film apparatus

*by Pierre Véronneau, La Cinémathèque Québécoise
(translated by E. Bowser)*

1. WHY APPARATUS SHOULD BE COLLECTED

The technical history of cinema has usually been treated as a poor relative. It has not been given the same importance as other aspects of film history, and even the film archives have neglected it. It is much more usual to consider the works themselves and not the means which were needed to produce them. However, these means are more than simple tools. Not only do they give evidence of the development reached in a specific period — technical progress goes hand-in-hand with the art and language of the cinema — and reveal the means used to emerge from the various crises or impasses which the cinema has encountered, but they also shed light on the links between the different national cinema industries, and on the work of the great majority of filmmakers.

A visit to a technical museum makes one recognize all this, and helps one to understand how this view of the history of the cinema is a summary of encounters and innovations, some of which played a determining role in the development of the seventh art. Finally, it

should be underlined that, just as there exist national cinematographies, there exist national technologies, more or less complex or lasting according to circumstances. A museum of cinema will also trace this aspect of cinematographic reality in each country.

2. HOW TO BUILD A COLLECTION OF APPARATUS

Except for the pre-cinema devices, such as magic lanterns, there is no defined market for the apparatus of cinema. It is not yet fashionable to have in display rooms an arc projector or a gigantic Technicolor camera. Where can the apparatus of cinema be found? For pre-cinema devices, or for amateur apparatus, one may go to antiquarians or merchants specializing in old toys. For more professional types of apparatus, and those later than 1900, it is most practical to go to those who have used them: filmmakers, production companies, cinemas, educational or cultural institutions, the armed forces, etc. Most of these institutions are in general willing to deposit on indefinite loan or to donate their material to film archives. Some are more hesitant to do this. Then it becomes a problem of the price to pay. There is no fixed scale: it is necessary to take into consideration the age of the apparatus, its rarity, its historical importance, its pertinence to the national history, and sometimes its anecdotal history (e.g., a camera which was used to shoot an important film). The museums of cinema, for practical reasons, often give more importance to pre-cinema devices, to cameras and small projectors. We should not neglect to preserve sound, editing, laboratory and animation apparatus as well as the big projectors, despite the inconveniences they bring with them. Finally, it would be desirable to establish collaboration methods among archives. This might take several forms: exchange, deposit, supplying copies or models of rare apparatus, a central bank of information, a spare-parts bank, etc. This collaboration would permit the enrichment of each collection, and above all diversify the apparatus which might be available for study.

3. HOW TO EXHIBIT APPARATUS

There are several possibilities for film archives to display their collections:

- 1) There may be a museum attached to the film archive's offices. The advantages are that the museum may be open during the working day, it is easier to give the necessary surveillance for the security of the works, and it is easier to arrange guidance for visitors. The disadvantages may be problems of space, and that the number of visitors would be limited.
- 2) There may be a museum adjacent to the archive cinema. The advantages are that it will attract the film-going public, and there will be a good attendance during the intermissions. The disadvantages may be in the greater needs of surveillance, and that the museum may be closed during the hours when no films are shown.
- 3) The apparatus collection may be displayed in another museum. The advantage may be that the collection finds a larger and more diversified audience, but the disadvantage is that it is too far removed from the heart of the film archive's activities.

To make viewing the collection more useful for visitors, one should foresee a good system of identification of the various exhibits (see 6, on identification). This information may be in a printed catalogue, or on cards. The cards may be mounted under plastic, and used as a display label in connection with the apparatus to which they relate.

Technical museums are more attractive if there are possibilities to manipulate the exhibits, or to see certain apparatus in operation. There exist some museums (in Rochester, and in Brussels) where kinetoscopes, mutoscopes, zoetropes and magic lanterns are functioning. Sometimes one may have recourse to reconstructions. Some museums use models to explain the operating mechanism of the machine (the movement, the shutter, etc.): these models are placed beside the various projectors and cameras to which they correspond, and are operated electrically or manually by remote control. It would be desirable if these models could be made available to other

archives. The archive which is in possession of such models should inform the other archives. One might also think of using photographs (especially photographs which show the filmmaker using the apparatus), dioramas, slideshows and audiovisual presentations, or even film extracts which would make the museum more attractive and more educational.

4. STORAGE

A technical museum in any case should not be just a warehouse. It is preferable to have an open area for display of the essential pieces, and to rotate other collection items. This implies that the film archives must plan for a place of storage. As the principal danger which threatens the apparatus is rust, the place of storage should not be too damp. The mechanisms should be kept well lubricated and even, if practical, kept covered with a diffusion of a very light layer of oil on the exterior surface. It is also necessary to pay attention to the wooden boxes and leather straps which are liable to rot, and they should be stored in adequate containers.

5. RESTORATION

There are two types of restoration:

- 1) Superficial: restoring the apparatus to its original appearance without worrying about its functioning
- 2) Complete: restoring the apparatus to function as it did originally.

For restoration, it is possible to have missing parts manufactured, which is rather costly and sometimes complicated, or, if one has several examples of the same apparatus, it is sometimes possible to complete one from the parts of the others. The creation of a bank of such extra parts among the archives would help to resolve this problem.

6. IDENTIFICATION

There are two kinds of problems concerning identification:

- 1) Apparatus which was made by artisans is often without trustworthy sources from which to date it. In such cases, only some peculiarities of technique may exist to guide us, and we can only try to make approximations, comparing it to the data which exists for commercially-manufactured apparatus.
- 2) Apparatus which has been commercially manufactured is usually easily identifiable. The most useful sources of information are the periodicals in which advertisements appeared (technical or non-specialized in cinema), the technical manuals and handbooks, the catalogues and operation manuals of the manufacturing companies. Unless otherwise indicated by inscribed dates or technical modifications on the equipment itself, it is preferable to date an apparatus from the year of its being put on sale. It should not be forgotten that companies often sold several models of the same apparatus.

Once the apparatus has been dated, what information is needed to complete the identification?

- 1) Physical and technical description:

The physical description includes the dimensions and the external appearance of the apparatus, distinguishing the principal parts, the body, the magazines, etc. The technical description covers the operating mechanisms (a drawing may be very useful), the drive, the shutter system, the viewing mechanism or system, the lens, the sound system (recording or reproduction) and, for projectors, the framing and the lamp house and lamp.

- 2) The historical details:

It is often quite useful to give data on the origin of the apparatus, on its development, its conception, its manufacturer, and its use. This helps one understand the particular interest of the apparatus and its links with the history of the cinema.

Illustrations

The number at the end of each caption indicates the chapter and section in the handbook to which the photograph refers.



Old collections of film are frequently found in rusty, battered cans like these, but more often than not the film inside is in good condition. It must be examined, cleaned and repaired if needed, and placed in new cans for storage.

II.2.



Punching out a sample from a nitrate film for testing purposes.

III.2.3.1.



The sticky stage of nitrate deterioration. At this point it may be still possible to save the film but it must be copied at once.

III 2.3 1 b.



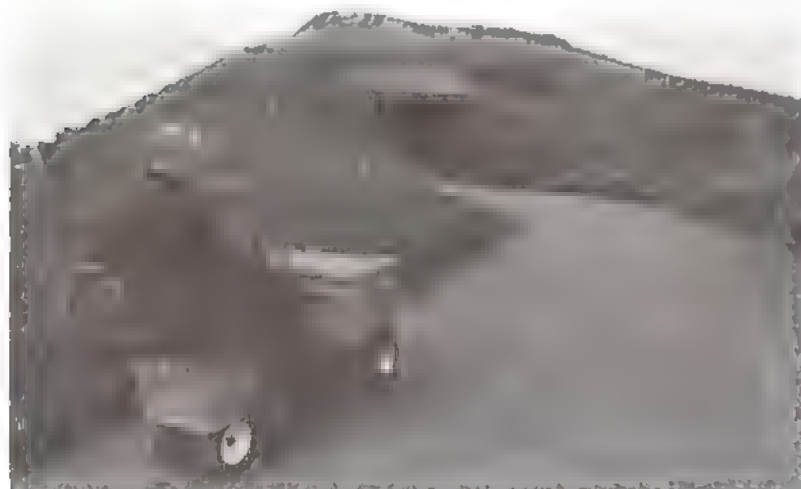
A late stage of nitrate deterioration: the reel has begun to break down into dust. It is no longer safe to store this reel. It should be submerged in water and sent for disposal (see Chapter VIII.1.).

III.2.3 1.e.



The thermo-hygrometer records temperature and humidity in a nitrate vault. Notice that films are stored flat and not on end, to avoid distortion caused by pressure from the weight of the film.

III.2.3.3.



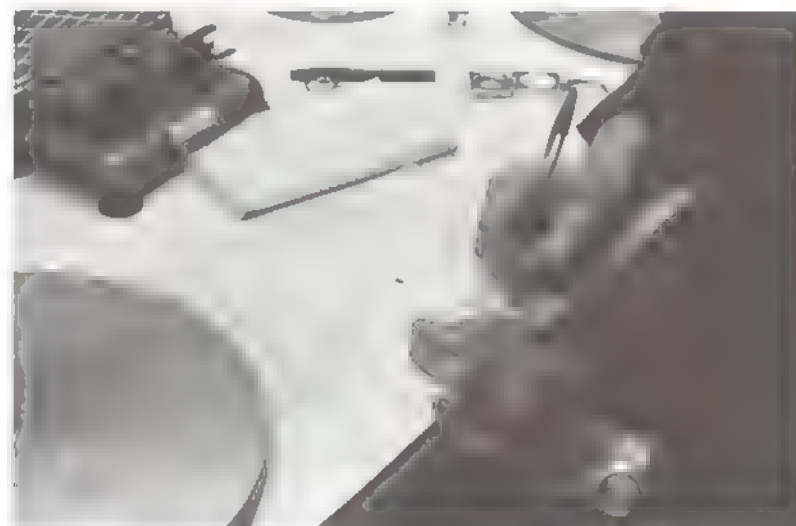
An electric trolley used to transport films from a van parked on the road to the vaults. Vaults should be located as far as is practical from major industrial areas to avoid the chemical dangers of pollution. Nitrate vaults must be at a distance from congested areas to avoid risks to the population from fire and the noxious fumes that accompany it.

III.5.1.



Modern nitrate storage vaults. The large blowout vents are required to release gas and avoid explosion in case of a fire.

III.5.1.



The results of the technical examination are recorded on a specially designed form.

III.5.2.



Films must be cleaned with care to avoid abrasion of the emulsion. Most dirt can be safely and efficiently removed by ultrasonic cleaning machines. This one is manufactured by Lipsner-Smith.

III.5.2.



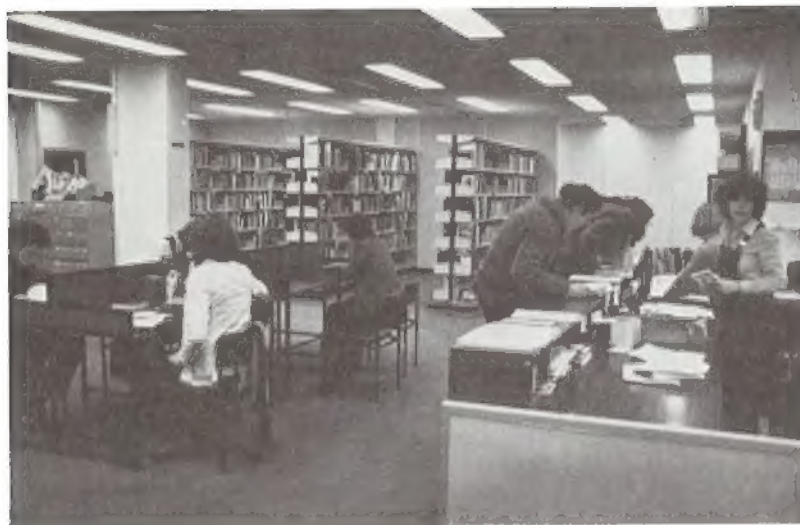
Superficial abrasions of the base can be removed by polishing. This is the Arriflex polishing machine.

III.5.2.



A cataloguer works directly from the film to record the descriptive information. This is a modified 4-plate Steenbeck flatbed viewing machine, which handles film very gently if used correctly. A similar type is often used by researchers in the archive (see Chapter VII.6.2.1.).

IV.1.2.



A library reading room showing the enquiry desk and the lending book collection.

V.2.1.



A central reference file for press cuttings.

V.2.7.6.



Film posters framed and ready for an exhibition.

V.3.2.



Space is usually a problem for the growing quantities of documentation materials. One solution is compact automated shelving. The Sperry Remington Lektriever storage system, used here for stills, returns the needed shelf at the touch of a button. It requires a reinforced floor to carry the heavy weight.

V.3.1.5.



The "U-matic" videocassette is checked on a Barco triple standard colour monitor before it is added to the access collection.

VII.6.2.1.



An old bunker is pressed into service for temporary storage of nitrate films until new nitrate vaults can be built.

VIII.4.



Existing structures are sometimes adapted to film storage. Here, nitrate vaults have been constructed inside some old farm buildings.

VIII.4.



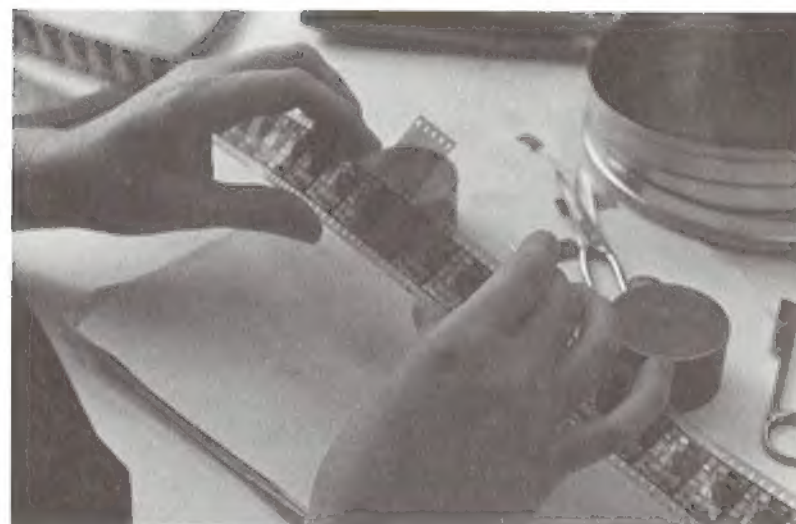
A roll of nitrate film in need of repairs.

VIII.5.



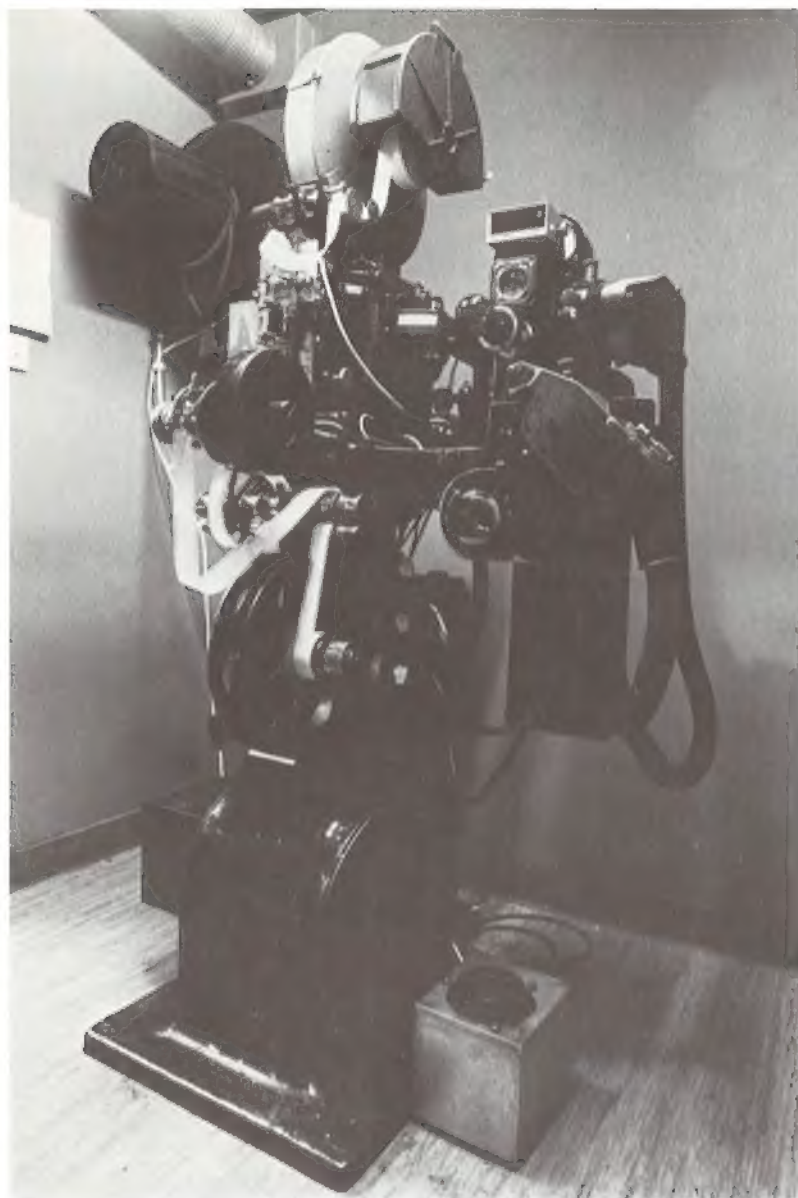
Preparing master material for printing.

VIII.5.



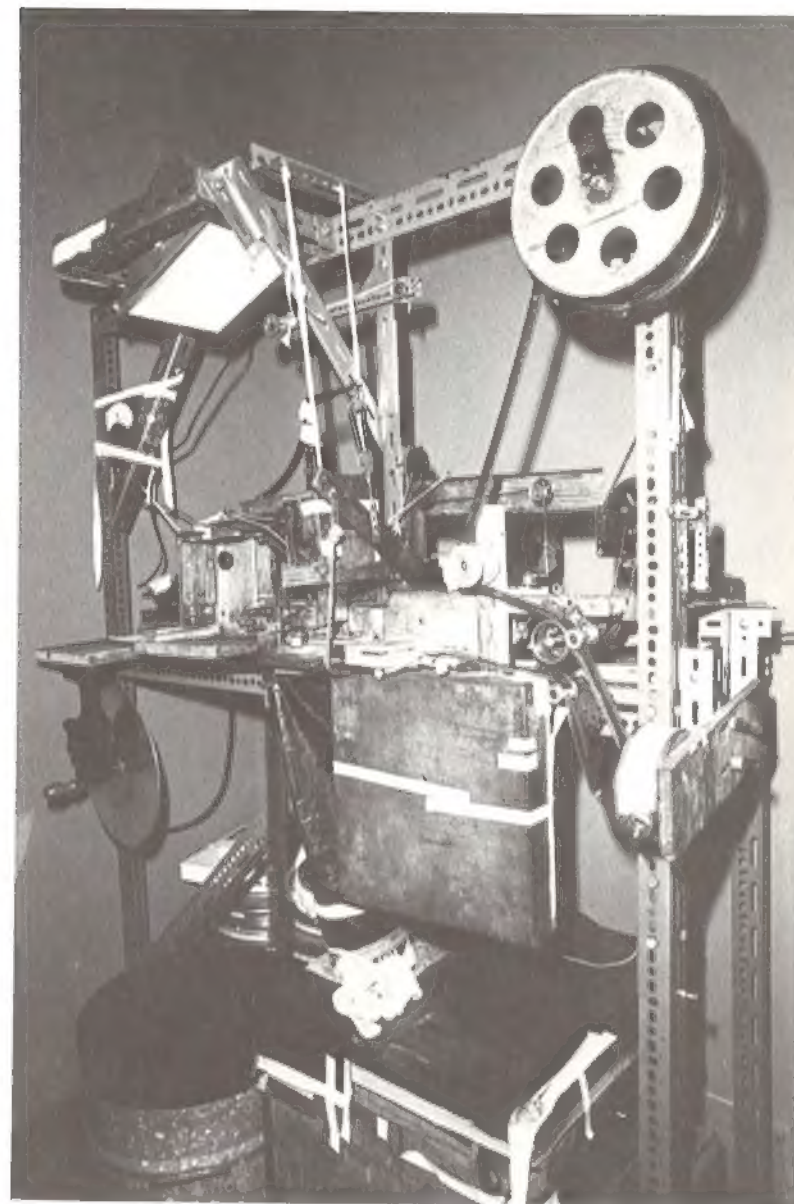
The end-to-end tape splice is preferred to the old method of overlapping cement splices because no frames are lost.

VIII.5.



Step-printing is slower than continuous printing but in most cases results in superior image resolution. This is the Debie "Matipo" 35 mm contact step-printer.

VIII.5.



Ingenuity sometimes solves archival problems. This "Mark IV" home-made printer put together with rubber bands and paper clips has been used for very slow copying of extremely fragile films.

VIII.5.